ASSESSMENT OF THE OYSTER MARKET DISTRIBUTION CHAIN AND ITS IMPLICATIONS FOR COOPERATIVE FORMATION IN THE ALASKA MARICULTURE INDUSTRY

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A

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ABSTRACT

Market preference for attributes of Alaska-produced Pacific oysters (*Crassostreas gigas*) is studied using survey techniques. Oyster buyers in the continental United States are surveyed to determine the relative importance of intrinsic and extrinsic product attributes, ranging from oyster size to seasonal availability patterns. Implications of market preferences for the development of mariculture cooperatives are then considered. Extrinsic product characteristics such as a good business reputation, frequency and seasonality of product availability, and product price were relatively important to respondents when compared to intrinsic product characteristics such as size, shape, or presence of grit in the oyster.

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CHAPTER 1: INTRODUCTION

The oyster culture industry in Alaska is on the verge of a significant expansion. Shellfish producers have cultured Pacific oysters (*Crassostreas gigas*) in Alaska for a century and have consistently been producing marketable product since the mid 1980s. In 2002, however, the state of Alaska began work on a program to expedite the development of the shellfish mariculture industry for clams, mussels, scallops, and oysters. In 2004 the state of Alaska pre-approved 158 lease sites for mariculture, of which 98 were suspended culture sites suitable for oyster production. These sites were made available to the public through an auction (McGrady, personal communication, 2004). As of June 2004, 36 of these sites have been leased for mariculture production, including 16 suspended culture sites. Prior to the lease, only 58 sites total in Alaska were permitted for oyster production and only 29 reported any production in 2003 (Timothy and Petree, 2004). The introduction of the new mariculture operations into the marketplace will represent significant growth in the industry.

The first market-sized oysters from the new growing operations will not be available before 2007, at the earliest. But oyster production from Alaska stands to increase markedly when the product comes online. Traditionally, the primary market for Alaskan cultured oysters has been within the state. Producers have targeted the urban areas of Anchorage and Juneau, and have successfully sold product in coastal tourist destinations during summer months. Producers and industry marketing groups report that the Alaskan market is increasingly saturated, however, and anticipate that production expansion spurred by the new aquatic farm sites will mean markets outside Alaska must be

identified and cultivated. A small percentage of Alaska's oyster product is already sold outside Alaska, primarily in the continental United States. According to Alaskan oyster industry participants, the volume of product moving to such markets must increase substantially in coming years to sustain continued growth in the industry.

As oyster producers move into this next phase of their industry's development they may seek ways to achieve economies of scale to help them with these efforts. One tool commonly used in food production industries, including agriculture, wild capture fisheries and mariculture, is the cooperative business form (Pollnac and Poggie, 1991). There are myriad forms of the cooperative, ranging from the marketing cooperative to the production cooperative.

Cooperatives can provide many useful tools to their members, including the ability to achieve economies of scale in purchasing and selling, to pool assets for capital developments or other investments, and to gain bargaining power in the marketplace (Chaddad and Cook, 2004; Jentoft and Davis, 1993; Peterson and Anderson, 1996).

Successful marketing and sales of product depend on a variety of factors. Product quality, a well-designed distribution chain and the correct choice of a business structure are just some of the many elements that are critical in the sales and marketing of oyster product. Depending on the marketplace preferences for oyster product, the strongest combination of these elements may or may not be achieved through the joint efforts of many producers in a form of cooperative business structure.

The main objectives of this research are to: a) identify geographic and demographic opportunities for the marketing of Alaskan cultured oysters; b) identify those product

characteristics which are most important to the successful marketing and sale of oyster product; and c) assess the implications of the market data for the possible formation of producers' or marketing cooperatives for Alaskan cultured oysters.

RESEARCH AND METHODS OF ANALYSIS

To obtain information on the potential market for Alaskan oyster product, surveys were mailed to food and seafood businesses that handle oyster product in the United States and Canada. The survey elicited information about seafood businesses' preferences for various attributes of oyster product, as well as information about the businesses' perceptions of their customers' preferences. Information about the businesses' characteristics, such as role in the supply chain, product mix and amount of oyster product handled, was sought.

BACKGROUND

The Alaskan Oyster Culture Industry: Past, Present and Future

The first attempts at growing oysters in Alaska began in the early 1900s with seed imported from Japan and planted in the intertidal zone of beaches. Although efforts to produce oysters in the intertidal zone continued for more than 50 years, this intertidal production method proved difficult in the Alaskan climate. Restrictive regulations also contributed to the eventual failure of the industry in the late 1960s (RaLonde, 2004).

Oyster mariculture resumed in Alaska in the late 1970s with the introduction of suspended culturing. In the suspended culture method, oysters are placed in hanging lantern nets or cages and suspended from longlines or rafts. The systems are firmly

anchored to the sea floor and the oysters live in the suspended environment until they have grown to a harvestable size. As filter feeders, oysters access the necessary food in the water column as ocean water naturally cycles through their environment.

Oysters are grown and cared for in suspended culture systems until reaching market size, which can take one to three years. Oysters can be harvested at a range of sizes depending on market specifications. Generally, oysters are classified in five size ranges, as shown in Table 1 (Painter and RaLonde, 1993).

Table 1. Oyster sizes

Size	Length in Inches
Yearling	Up to 2
Extra Small	2 to 3
Small	3 to 4
Medium	4 to 5
Large	5 or larger

In 2002 the Alaska Legislature passed a bill designed to stimulate growth in the mariculture industry in the state. The bill directed the state's natural resource agencies to pre-approve sites suitable to mariculture and to make site leases available through a public offering (22nd Alaska State Legislature, House Bill 208). Ultimately 98 new sites were approved for suspended culture (McGrady, personal communication, 2004).

The typical size of a site intended for an oyster lease is 10 acres (RaLonde, 2004). Leases on 16 suspended culture sites were granted in the spring of 2004 and the first oysters are expected to be in place at some farm sites by the spring of 2005.

Constraints to Market Development

Challenges to producers and distributors attempting to move oyster product from Alaska are substantial. In addition to the production challenges presented by the harsh Alaskan environment, producers and distributors must contend with the distance from market, cost of production and resultant product price, achieving quality and grading standards, and overcoming a lack of exposure to the product in the marketplace. Mandatory marine toxin testing also drives up the cost of product and delays its delivery to the marketplace.

Alaskan oyster product benefits from several positive characteristics that differentiate it from other oyster product. One of these, the purity of Alaska's coastal waters, has proved an important selling point for Alaskan oyster producers (Overpeck, 2004). In addition, cold water temperatures naturally inhibit oysters in many parts of the state from spawning. Oysters are not sold for consumption when spawning, since the process causes physiological changes to the animal that affect its appearance and taste (RaLonde, 2003). Water temperatures must reach 68 to 72 degrees Fahrenheit for a sustained period in order for Pacific oysters to spawn (Pierce, 1987). The conditions for a full spawning cycle rarely occur in Alaska, though reproductive development can begin, depending on weather conditions. Nevertheless, Alaskan oyster product is often available for consumption during times when competing oysters, particularly Pacific oysters produced on the western coast of North America, spawn during warm summer months.

Of the challenges facing Alaskan producers, the high cost of production and the difficulties posed by Alaska's remote geography may be the most difficult for the

industry to tackle. The costs associated with suspended culture and marine toxin testing have forced Alaskan oysters into high end markets, which are better able to absorb the higher costs of production and make the sale of product profitable.

Alaska's remote geography and transport challenges also raise the costs of oyster production in the state. Because the majority of Alaskan product is sold onto the fresh market and product can take several days to reach the continental United States by truck, Alaskan oysters are generally flown to the marketplace. The costs of shipping live product are substantial. Shipping fresh seafood product on commercial air carriers also poses challenges for Alaskans. Areas of Alaska where oysters are produced are only serviced by one large commercial carrier, which has limited service east of the Rocky Mountains.

THE RESEARCH ENVIRONMENT

The University of Alaska Fairbanks is undertaking a multi-disciplinary research project to evaluate the intrinsic quality of oysters from Alaska's three major oyster producing regions. These qualities include nutritional composition, glucose levels, lipid levels, and shelf life. The research will be paired with the results of the research described in this thesis, in hopes that the industry will be able to use the combined information to better position itself for effective deployment into markets in the continental United States.

Research on market demand for oysters or other shellfish products has previously been conducted in several regions of the United States and Canada. However, with the

exception of two privately prepared reports, that research was conducted at the level of the final consumer instead of the distribution chain.

Manalo and Gempesaw (1997) used the conjoint analysis method to decompose consumer preference for oyster attributes in the Northeastern United States based on three product attributes, with particular attention paid to consumers' possible concerns about food safety issues. Their research included the conclusion that consumers prefer farm-raised product and product that has been inspected by the Food and Drug Administration.

Hanson et al. (2002) looked at consumer attitudes toward oyster product in the United States, again with emphasis on food safety issues. The researchers broke their respondent group into two subsets: those people who do sometimes consume oysters and those who never consume oysters. They concluded the main reasons for oyster consumers to limit their intake were price, product safety and lack of fresh product. Those people who never consume oysters faulted sensory attributes such as taste, texture and smell, followed by food safety concerns.

A study of marketing opportunities for New Brunswick cultured oysters, produced by the private firm Unic Marketing Group, was based on interviews with oyster industry participants, including brokers, distributors, retailers and food service operators (Hardesty, 2003). Likewise, the Pacific Coast Shellfish Growers Association contracted with the Food Marketing & Economics Group for an analysis of marketing opportunities for Pacific coast oysters (Food Marketing & Economics Group, 2001).

The existing literature provides interesting insights into consumer preferences for oysters given product, supply and pricing paradigms that describe a majority of oysters

produced in North America, the Atlantic oyster (*C. virginica).* However, the pricing, production, distribution, and product attributes of this product do not align with those present in the Alaskan industry. One report does treat the Pacific oyster (*C. gigas*) but within a production and pricing structure that is inapplicable in Alaska.

In addition, the subject matter of several of the oyster articles, food safety, addresses concerns that do not generally apply in Alaska, where good water quality prevents many of the problems that affect other oyster producers.[1] Pacific oysters (*C. gigas*) produced in Alaska also stand apart from similar production in the northwestern continental United States for several important reasons including water quality and distance from market. The cost of producing oysters in Alaska and getting them to market renders them much more expensive then Pacific oysters produced in Washington, Oregon, and parts of British Columbia. Alaskan oyster producers are also particular in their extreme rural settings and the modest scale of most farms. Existing research into oyster markets has focused primarily on the preferences of the end consumer. Yet bringing product to a market, let alone a final consumer, is one of the greatest challenges facing the Alaskan industry. Finally, the recent changes to the regulatory structure in Alaska, which are likely to result in notable growth oyster production in coming years, introduce an element of extreme dynamism in the industry that is not comparable to situations elsewhere in the country.

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[1] In the summer of 2004, following the research discussed in this paper, unseasonably warm temperatures in some waters of coastal Alaska led to blooms of the naturally occurring marine bacteria, *Vibrio parahaemolyticus.* Forty individuals contracted *V. parahaemolyticus.* As a result distribution of product from several Alaskan shellfish farms was temporarily suspended until levels of the bacterium had returned to normal and safe levels. Such an occurrence is abnormal in Alaskan waters. However, it is important to note that the present research will not reflect any possible market impacts of the event (Alaska Department of Epidemiology, Bulletins No. 18 and 24, 2004).

For these reasons, among others, I determined the specificities of the Alaskan industry warrant research that directly addresses the circumstances of Alaskan oyster farmers. Accessing effective distribution channels is among the most critical issues facing Alaskan producers. Therefore my research focuses on the needs and preferences of that vital link between farm and consumer, the distribution chain.

THE RESEARCH OBJECTIVES

The structure and content of the survey tool were developed based on the information gathered in the executive interviews with Alaskan oyster industry insiders and oyster buyers from seafood businesses, as well as the existing literature on shellfish and seafood markets. The research was designed to help us formulate answers to the following questions:

- In which region(s) of the United States and/or Canada are there potential markets for Alaskan oyster product?
- Which intrinsic and extrinsic attributes are most important in a buyer's decision making process? Possible attributes include shelf life, method of production, delivery schedule, region of origin, water quality at the production point, price, and others.
- What product characteristics are important to a buyer's overall assessment of "quality"?
- What implications do market preference product attributes have for the possible development of marketing cooperatives for Alaskan oyster producers?

CHAPTER 2: METHOD AND PROCEDURE

Contemporary marketing research methods increasingly regard seafood as a multi-attribute product, where demand is the result of preference or aversion for any number of intrinsic and extrinsic product qualities (Anderson and Bettencourt, 1993; McConnell and Strand, 2000). Researchers increasingly rely upon food distributors and other intermediaries in the food supply chain to assess marketplace attitudes and opportunities for seafood product. By soliciting information within the distribution chain, rather than from the end consumer, the researcher gains information about the structural needs within the distribution chain that promote or inhibit product successful entry into the marketplace. In the increasingly consolidated and vertically integrated food industry, customer desire for a product is essentially irrelevant if the product does not meet the needs of the distribution chain. This is particularly true for seafood product produced in Alaska, as Alaskan product is subject to geographic restrictions which strongly affect access to market channels. Additionally, businesses aggregate the preferences of their consumers in order to make decisions on purchasing and sales, and therefore act as a repository for preference information for their market or region. Because individuals in the seafood supply chain businesses are actively engaged in the seafood industry, I anticipated higher utility from their responses relative to the response of an uninitiated consumer.

Information about respondents' geographic location, product mix, role in the supply chain, perceptions of Alaskan oyster product, and other issues are discussed qualitatively, based on the survey results. In addition, information was sought about the contribution of

specific attributes such as supply consistency or shelf life to overarching perceptions of product such as quality.

Data was collected using a mailed survey tool (Appendix A). The survey was mailed to 984 businesses in the United States and Canada that handle oyster product. An introductory letter explaining the purpose of the research and requesting participation was mailed to businesses one week before the distribution of the survey tool. The businesses who received the survey tool were chosen because of their inclusion in the Prospector seafood industry database produced by the trade publication firm Urner Barry Publications (Jersey City, New Jersey). All businesses listed in the database received surveys. An additional 176 surveys were mailed but were returned because of changed addresses or other delivery problems.

Seafood consumption and distribution vary greatly by region. For example, the Urner Barry database lists 117 businesses in Florida handling oyster product, but only 7 businesses in Colorado. Regional analyses, therefore, vary in their scope and the number of businesses canvassed. Differences in the number of businesses handling oysters in a given region have both positive and negative implications for this research and for the Alaskan oyster industry. For example, with only 4 surveys returned from Colorado businesses more than a 50 percent response rate is achieved. While the small number of potential respondents in some regions makes statistical analyses problematic, four businesses may represent a significant amount of distribution power in Colorado's market of 4.3 million people. Access to their product preferences and their opinions of customers' preferences may represent a significant amount of knowledge of that market.

Likewise, business relationships with those businesses may prove more beneficial than similar relationships with five times as many businesses in a state like Florida.

Development of the Survey Tool

In order to determine the goals for the survey a number of interviews were conducted with individuals in the Alaskan oyster aquaculture industry including: Raymond RaLonde, aquaculture specialist for the University of Alaska Fairbanks Marine Advisory Program; George Overpeck, a member of the Kachemak Bay Shellfish Growers Cooperative, which represents 12 oyster culturing operations in Southcentral Alaska; Rodger Painter, vice president of Alaskan Shellfish Growers Association; Greg Favretto, president of FAVCO, a seafood distribution firm in Anchorage, AK; Dave Chipman, an oyster farmer from Prince William Sound, AK; and Rob Winfree of 10^{th} & M Seafoods, a retail and distribution company in Anchorage, AK.

The interviewees were asked about the current state of the industry and oyster markets, and their views were sought regarding the future of the industry. Potential challenges as well as strengths were discussed and areas for possible inquiry for the research were explored. Current oyster culture technology in Alaska imposes a set of limitations on production, the market implications of which were explored with the industry informants. For example, almost all oyster growing operations in Alaska currently use suspended culture systems, as harsh coastal winters would likely prove fatal to oysters grown on-bottom. This method of production is expensive relative to on-bottom and other methods, imposing a premium price on most Alaskan oyster production.

In addition to interviews with participants in the Alaskan oyster industry, a number of interviews were conducted with personnel at oyster businesses drawn from the list of potential respondents. These personnel were self-identified as the person responsible for oysters at their business. The oyster personnel at five retailers and/or distributors were interviewed about their preferences and opinions regarding oyster product, as well as their experiences with oyster product. From these conversations, several trends emerged. Generally, companies desired a "quality" oyster product but indicators of quality could vary. For one oyster buyer, quality included having a visually pleasing amount of meat, or "fill", in the oysters' shell. For several buyers, quality was related to having a quick harvest-to-delivery timeframe and, similarly, good shelf life. Other issues involved in the oyster buying process included availability of product. Some buyers reported that product was difficult to procure during different times of year, in some cases because of harsh winter weather and in other cases because of oysters' spawning patterns. Despite the focus on food safety in several of the papers identified in the existing literature, buyers reported that food safety was not a significant concern to them or their customers when purchasing oysters.

The executive interviews were conducted until "theoretical saturation" was reached. At the point of theoretical saturation each additional conversation with a buyer contributes few or no new insights to the researchers' understanding of the topic.

CHAPTER 3: SURVEY RESULTS

Though several studies have been conducted on marketplace preferences for oyster product, the results of these studies have limited utility for Alaskan oyster producers. Many of the studies address issues of food safety, stemming from several cases of oyster contamination that occurred in the continental United States and had grave effects on markets for that product. Other research addressing general preferences for oyster product targeted final consumers, but gave no consideration to the preferences at the level of the distribution chain. Given the inherent geographic challenges facing the Alaskan producer, however, establishing relationships with businesses in the distribution chain is critical to moving product successfully. Finally, the few studies that have been conducted at the supply chain level depend on product and pricing paradigms that do not describe the Alaskan product.

This survey research attempts to identify potential markets for Alaskan oyster product based on the preferences of oyster businesses in the distribution chain, with the intent of addressing the specificities of Alaskan product and production. Seafood consumption and distribution often varies by geographic region and returns were analyzed by region, based on the nine United States census divisions (U.S. Census Bureau, www.census.gov). The research is intended to inform Alaskan oyster producers and sellers of potential ways to expand their sales to the continental United States.

RESULTS

Of the 984 surveys that were distributed to seafood businesses in the United States and Canada, 87 were returned for an overall return rate of 9 percent. No surveys were returned from Canada, and consideration of Canadian markets was therefore excluded from the analysis. When analyzed by region, response rates range from 3 to 18 percent. Response rates by geographic region are shown in Table 2.

Table 2. Response rates by U.S. Census survey division

U.S. Census Division	Number of Surveys	Number of Respondents	Response Rate	States in the Division
West North Central	17	3	18%	ND, SD, MN, NE, IA, KS, MO
Mountain	20	3	15%	ID, MT, WY, NV, UT, CO, AZ, NM
East North Central	49	8	16%	WI, MI, IL, IN, OH
Pacific	210	26	12%	AK, WA, OR, CA, HI
New England	94	9	10%	ME, NH, VT, MA, RI, CT
West South Central	76	6	8%	OK, AR, TX, LA
South Atlantic	270	19	7%	WV, VA, DE, MD, DC, NC, SC, GA, FL
Middle Atlantic	124	8	6%	NY, PA, NJ
East South Central	36	1	3%	KY, TN, MS, AL
Total	**896**	**83**		

Data collected through the surveys was generally consistent across geographic regions. Although the response rate was slightly lower than average for a mailed survey, I

have a high level of confidence that the data can be considered representative of greater trends for the purpose of this analysis. Strong commonalities in preferences and opinions throughout the data set reinforce the validity of the survey. In addition, the survey was designed with repetitive questions, to verify the relevancy of responses. (For example, respondents were asked about the importance of vendor confidence in the context of several different questions. Responses consistently identified this as a key issue in buyers' evaluation of product, supporting the validity of the responses.)

Nevertheless, lower response rates do present some limitations to analysis. While trends and preferences on a macro scale are possible, I refrain when necessary from drawing conclusions at more limited, regional scales. Future research targeting specific geographic or demographic subsets will be more useful in describing trends at a micro level.

To identify possible preference trends by business type, information was gathered about the respondents' businesses and their roles in the seafood supply chain. A diverse group of businesses in a range of activities, from oyster growers to distributors and retailers, responded to the survey. Respondents identified their businesses' role in the supply chain, assigning the relative importance to each of six possible business functions in their own firm's activities. Distribution and wholesale were rated highest on average, with a value of 8.5 on a 1 to 10 scale. About 60 percent of respondents assigned the highest utility to distribution/wholesale activities (equal ratings were possible). Other possible functions were harvesting, which was assigned highest utility by 54 percent of

respondents; retail, 46 percent; processing, 39 percent; import, 20 percent; and export, 7 percent. Many respondents indicated involvement in several supply chain activities.

The diversity of the respondents' product offerings varied greatly; some businesses carry only a single product while others have a broad product mix. Respondents also move varying amounts of oyster product each week or year, ranging from a few dozen oysters each week to millions of oysters annually.

The Marketing Mix

A firm's marketing activity is a complex construction of many variables, ranging from the attributes of the product to the size and style of its sales force, to transport or delivery options, to its pricing strategy. Modern marketing theory often refers to the strategic combination of these factors as the "marketing mix" (Kotler, 1997). The marketing mix is often broken down into four components, commonly referred to as the "four Ps": product, placement, price, and promotion. The four Ps provide a framework which a firm can use to examine its product offerings and other influential elements of its business in order to arrive at the most effective method for producing, marketing and selling products.

A producer or company must continually make strategic decisions and adjustments to the four elements of the marketing mix. To illustrate this idea consider the Alaskan oyster. Different elements of the *product* itself might include not only size, shape, flavor profile and cleanliness of the shell, but also packaging and nutritional qualities. Adjustments to *promotion* strategy could include choosing to highlight key attributes such as water quality or emphasize the availability of product during summer months.

Price strategies can range from discount introductory pricing to higher, luxury-oriented pricing and can vary along many lines. Likewise *placement* could involve a host of distribution strategies, ranging from direct-to-consumer sales to sales to wholesalers; or identifying a geographic region or demographic subset of the population as target customers. Arriving at the final strategic combination of these factors is an involved process that depends on carefully gathering and analyzing information on the customer and the competitive environment.

The goal of this research was to strategically determine those variables of product, price, placement and promotion that, when combined, will allow the business to access a profitable sector of the marketplace. Because the marketplace is dynamic and evolving, the business will continually make adjustments and advancements in the marketing mix in order to maintain access to the marketplace over time.

Survey results were examined in the context of the marketing mix, considering data relevant to product, placement, price and promotion in turn. For each of the four elements of the marketing mix, a discussion of survey results is followed by a consideration of the realities of current Alaskan production.

The Product as a Composite of Many Attributes

Marketers have long understood the perceived value or quality of a given product to be a composite of preferences for many attributes. Successful product marketing and sales depend not only on a core product, but on a firm's ability to provide a suite of desirable services and benefits to support the product offering. The most exquisite tasting oyster may nevertheless be undesirable in the marketplace if procurement and shipping

processes are unwieldy, or if the grower is unable to offer sufficient product volumes, or is unable to assure a regular delivery pattern.

To address this issue, respondents were asked to rate specific attributes of oyster product that contribute to quality. Preferences for various intrinsic and extrinsic attributes, such as geographic origin or shelf life were also rated. Other survey questions were specifically designed to address the idea of a "total product," consisting not only of the physical product itself, but also business functions such as supply consistency or uniformity of grading. The research approached the concept of the total product from three different angles. I sought to identify the role of eight attributes in a *general evaluation* of oyster product and to identify the most desirable profile of attributes. I sought to understand the importance of thirteen product attributes to a buyer's overall assessment of the *quality* of oyster product. Finally, I attempted to determine the role of ten product attributes and business functions in a buyer's decision to actually *purchase* oyster product.

General Evaluation

Survey respondents were asked about their opinions and beliefs regarding a number of possible attributes for oyster product, ranging from supply characteristics to the importance of size in overall assessment of oyster product desirability. Respondents rated the eight product attributes on a 1 to 10 scale, where 10 represents a highly desirable or important attribute (Table 3). Confidence in the vendor was the most important or desirable attribute. Shelf life and supply consistency followed as the second and third most important attributes. Subcategories of seven of the eight attributes were also considered.

Table 3. The relative importance of eight attributes to the overall evaluation of product

Confidence in Vendor			**9.1**	**(±1.7)**
Shelf Life			**8.9**	**(±1.9)**
2 weeks	7.0	(±3.9)		
10 days	6.9	(±3.4)		
7 days	5.1	(±3.6)		
3 days	2.6	(±3.0)		
Supply Consistency			**8.9**	**(±1.9)**
Year Round Consistent	8.6	(±2.5)		
Seasonal Consistent	6.3	(±3.4)		
Year Round Intermittent	5.0	(±3.0)		
Seasonal Intermittent	4.8	(±3.2)		
Price			**8.1**	**(±2.1)**
Less than $2.50/dozen	7.7	(±3.5)		
$2.50	6.2	(±3.6)		
$3.50	5.7	(±3.5)		
$4.50	4.6	(±3.4)		
$5.50	3.6	(±3.0)		
More than $5.50	3.0	(±2.9)		
Product Form			**8.0**	**(±2.7)**
Live	8.7	(±2.8)		
Shucked	7.1	(±3.3)		
Frozen	3.3	(±3.1)		
Smoked	2.4	(±2.4)		
Oyster Size			**7.4**	**(±2.3)**
Medium	7.6	(±3.0)		
Small	6.5	(±3.4)		
Large	5.6	(±3.6)		
Extra Small	4.3	(±3.3)		
Yearling	3.0	(±3.0)		
Region of Origin			**6.8**	**(±2.9)**
Northeastern U.S.	6.4	(±3.7)		
West Coast of U.S.	5.9	(±3.8)		
Central Atlantic Coast	5.4	(±3.6)		
British Columbia	5.0	(±3.6)		
Maritime Provinces	4.3	(±3.4)		
Alaska	4.2	(±3.2)		
Gulf Coast	4.2	(±3.8)		
Australia/New Zealand	2.5	(±2.4)		
Europe	2.0	(±1.9)		
Method of Production			**6.0**	**(±2.8)**
Wild Harvest	6.1	(±3.5)		
Suspended Culture	6.0	(±3.3)		
Intertidal Culture	5.3	(±3.2)		
On Bottom Culture	5.2	(±3.2)		

Perception and Quality

In executive interviews during the survey development stage, interviewees often cited "quality" as an important motivator in their decisions to purchase oyster product. I asked respondents about the relative importance of 13 product attributes to an overall assessment of product "quality." Table 4 shows the average ratings of the thirteen attributes on a 1 to 10 scale. Shelf life, water quality and government safety certification were the most important attributes on average.

Table 4. Attributes contributing to perception of oyster quality

Attribute	**Rating**	**Standard Deviation**
Water Quality	9.3	±1.4
Shelf Life	9.3	±1.4
Government Safety Certification	9.0	±2.1
Grit	8.9	±1.6
Supply Consistency	8.8	±2.0
Price	8.8	±1.6
Fill	8.6	±2.0
Consistent Grading	8.4	±1.8
Shrinkage	8.4	±2.1
Size	8.3	±1.7
Geographic Origin	7.1	±2.4
Shape	7.1	±2.7
Cup Depth	7.1	±2.6

The standard deviation is smaller for those elements rated highest by respondents. This reinforces the consistent importance of these attributes to the assessment of overall quality.

Total Product

In a real life purchasing situation, favorable evaluation of a product or its quality still may not lead to a sale. To address this issue, I asked respondents about the importance of a set of product attributes and business functions to their decision to purchase product. These included such variables as confidence in the vendor and packaging. These findings are summarized in Table 5.

Table 5. Attributes contributing to the decision to purchase oyster product

Attribute	**Rating**	**Standard Deviation**
Confidence in the Vendor	9.3	±1.2
Taste	9.2	±1.4
Water Quality	8.9	±1.9
Price	8.9	±1.3
Year Round Availability	8.2	±2.3
Size	7.9	±2.1
Geographic Origin	7.8	±2.3
Uniqueness	7.3	±2.7
Minimum Order Size	7.0	±2.8
Packaging	6.8	±2.5

As was shown above, confidence in the vendor is the most important factor in a buyer's decision to purchase oyster product. Standard deviation is tightest for those

attributes rated highest, indicating that there is consistency across respondents as to the relative importance of the attributes.

Product

The product comprises a variety of elements ranging from appearance to taste to packaging. Many of the questions in the research survey elicited information about preferred variables of the oyster product. Respondents were asked about their own preferences when dealing with oysters products and were also asked about their beliefs about their customers' preferences.

Product Form

Respondents were asked to rate five different possible product forms on a 1 to 10 scale: live, shucked, frozen, smoked or other. Respondents across the various regions of the country consistently assign a very high rating to live product, generally between 8 and 10. Shucked product also scores well with respondents, while frozen, smoked and other products rank much lower, in the range of 1 to 4.

Likewise respondents indicate their customers prefer raw and raw shucked product over all other product forms. Raw and raw shucked product are rated 8.7 (±2.7) and 7.4 (±3.0) respectively, with notably lower ratings for all other forms.

Product Size

Respondents were able to rate five size grades of oyster, from yearling (less than 2 inches long) through large (greater than 5 inches long). Figure 1 illustrates the measurement technique used for the oyster.

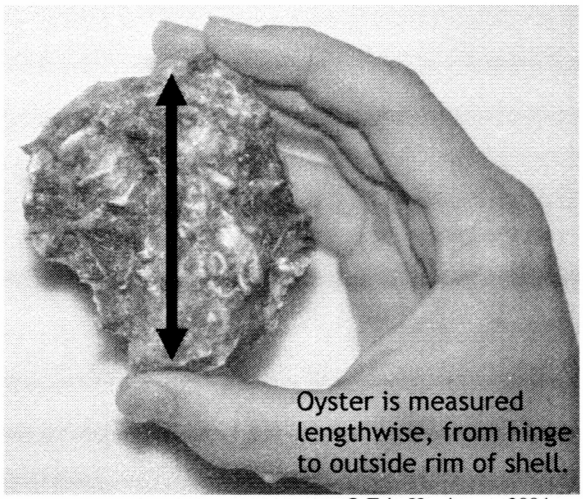

Figure 1. Measuring technique for the Pacific oyster

Respondents preferred the medium size class, with a range of 4 to 5 inches, giving it an average rating of 7.7 on a 1 to 10 scale.

Product Quality

Respondents weighed the importance of several product attributes to their evaluation of overall product quality on a 1 to 10 scale. Product attributes such as shelf life, fill (which refers to the amount of actual meat inside the oyster), lack of grit in the product, low shrinkage (discard) rates, the depth of the oyster's cup, and oyster shape were considered, as were several attributes relating to product promotion. Shelf life proved very important, with a rating of 9.3 (±1.4). Lack of grit in the product was highly rated, at 9.0 (±1.3). A government safety certification is viewed very positively by oyster buyers when they consider quality, earning an average rating of 9.0 (±2.1). Fill and consistently low shrinkage rates were both rated relatively highly, at 8.7 (±1.9) and 8.6 (±1.8) respectively. Cup depth and oyster shape were the least important of all 13

possible quality attributes, at 7.2 (±2.4) and 7.2 (±2.6) respectively, although cup depth was considered more important, at 7.9 (±1.6), among respondents who were familiar with Alaskan product.

Other Product Characteristics

The survey asked several questions about attributes that are extrinsic to the actual oyster, but are part of the product nonetheless. These include such things as packaging or culture method.

Respondents showed little consensus on preferred packaging, indicating that this may be an area where producers would do best to work with specific buyers to identify preferences. With four packaging choices provided—Styrofoam boxes, WetLock boxes with insulated liners, WetLock boxes with plastic liners, and other—fully one-third of respondents chose "other." Their preferred packaging method ranged from mesh bags to burlap sacks to "however harvester brings them in." WetLock boxes with insulated liners were the second most popular packaging method, with 31 percent of respondents preferring this packaging method, followed by WetLock boxes with plastic liners at 25 percent and Styrofoam boxes at 8 percent. The variety of responses may indicate that preferred packaging is best determined on a case-by-case basis, or perhaps that packaging will not be a factor that is easily homogenized in the marketing process.

Respondents also rated harvest methods for oysters, comparing wild harvest, on-bottom culture, suspended culture, and intertidal culture. Wild harvest and suspended culture were nearly identical with ratings of 6.1 (±3.5) and 6.0 (±3.3), while intertidal and on-bottom culture were at 5.3 and 5.2, both with a standard deviation of ±3.2.

Alaskan Product

A main purpose of this research was to identify opportunities for the sale of Alaskan oysters. Data was collected from those businesses that are already familiar with Alaskan oysters regarding their views of the product and some of its attributes. The survey instrument was designed to elicit information that would be relevant to the Alaskan industry's particularities.

I asked respondents to note if they were familiar with Alaskan product, and further requested that those familiar respondents indicate their level of agreement with ten statements about Alaskan product. In addition to the 15 respondents who were familiar with the product, an additional 16 respondents responded to all or some of the statements. Two thirds of the respondents who are familiar with the product are from states located in the Pacific census division. The remainder are scattered throughout the Western, Middle Atlantic, East North Central and South Atlantic divisions.

Alaskan product presents certain selling challenges, among them the high cost of production and subsequent high selling price. The survey inquired about a general willingness to purchase Alaskan oysters at a price that is currently representative of Alaskan product. Respondents had three possible responses, including the statement that they would not purchase oysters at the given price. These respondents are referred to in this thesis as non-buyers. I refer to the remainder of the group as potential buyers.[2] This classification is useful in identifying characteristics of possible markets.

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[2] Though respondents were given the opportunity to indicate they *would not purchase* Alaskan oyster product, they were not asked if they *would purchase Alaskan product.* Therefore it is not accurate to state that they would purchase product; only that they have not stated that they would not.

Non-buyers' and potential buyers' responses can also be evaluated by census division, as seen in Table 6. Overall response rates for each of the divisions are included as a point of reference as well, as these varied greatly by division.

Table 6. Percentage of respondents who are potential buyers, by census division

Census Division	Potential Buyers
East South Central	100%
Mountain	100%
East North Central	89%
New England	67%
West North Central	67%
South Atlantic	60%
Pacific	57%
Middle Atlantic	50%
West South Central	50%

Approximately 17 percent of the survey recipients in the Midwestern United States, which includes the East North Central and West North Central census divisions, responded to the survey. Of these respondents, two-thirds are potential buyers. Likewise, one can observe that nearly 60 percent of the respondents in the Pacific division, from which the greatest number of responses were elicited, provided non-negative responses about their willingness to purchase Alaskan oysters.

When comparing the non-buyers and potential buyers, I found that both groups respond similarly to nearly all of the survey questions. There are only a few questions on which their answers differ notably from the non-buyer group. [3]

[3] Respondents willingness to buy Alaskan product was compared to the sizeof the business, based on annual revenues, and the number of years in business. Data on revenues and business history was available

Alaskan Actuality

Current Alaskan product corresponds well with many respondents' preferred attributes. Alaskan product is primarily sold raw and in the shell, due to the relatively high value of oysters sold in the raw markets. Live oysters are generally air freighted to markets in the continental United States to assure prompt receipt and maximize shelf life. Harvest size of the oyster varies and can be a function of market expectations or production needs.

Respondents place high value on shelf life, water quality, lack of grit in the product, and supply consistency when considering the overall quality of a product. (Promotional factors, such as government safety certification, also prove important.) Of those respondents who are familiar with Alaskan product, 80 percent agreed that Alaskan product was of high quality, although 60 percent either didn't know or were neutral about whether the product was of *consistently* high quality. Eighty-seven percent of the familiar respondents agreed that the product tastes good. Over 93 percent of buyers who are familiar with Alaskan product responded positively to a statement that Alaskan waters are pristine. However, the product fared less well in matters of supply, with 67 percent of respondents disagreeing with the statement that Alaskan oyster product is readily available to them.

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through the Urner Barry database for approximately two-thirds of the respondents. No correlations were identifiable between either variable and the repondents' willingness to buy.

Placement

Product placement, or channel, is where and how the product will be moved into the market. Placement also includes the method for distribution of the product; for example, electing to move product directly into retail outlets or to establish relationships with wholesalers is a placement decision. Identifying demographic or geographic areas as a target market can be part of a placement strategy, as can the decision to target a particular franchise or retail outlet.

More than half of the respondents report sourcing oyster product straight from the primary producers, while only a third report sourcing from distributors. As noted earlier, the majority of respondent group identified distribution/wholesale activities as the most important function of their businesses. The direct relationships with primary producers are not, therefore, surprising.

Respondents rated different regions of the United States and Canada as origins of oyster product. Then they identified regions from which they actually source oysters. The results show that a favorable view of product does not necessarily correspond with a decision to source oysters from that region. Instead, respondents tend to source oyster product from the geographic regions closest to their businesses, even when they hold other regions in high regard.

For example, respondents from New England gave British Columbia (in Western Canada) and the Maritime Provinces (in Eastern Canada) comparable ratings as a geographic origin for oysters. But the respondents indicate that the northeastern United States, the Canadian Maritime Provinces and the Central Atlantic Coast are the most

important regions for them in their oyster sourcing. One likely explanation for these inconsistencies is that sourcing a perishable product closer to the point of business is easier.

One of the most critical links in the distribution chain is the interpersonal relationships of representatives of the different businesses. Personal relationships and the perceived reliability of the oyster supplier proved to be very important to respondents. Respondents indicated that their confidence in the vendor was the most important of eight general product attributes, with an average value of 9.1 (±1.7) on a 1 to 10 scale. Likewise, when choosing to actually *purchase* oyster product, vendors again give vendor confidence the highest value of thirteen possible attributes at 9.3 (±1.2).

The importance of the relationship between buyer and supplier is strongly reinforced by the data on the length of respondents' relationships with their existing oyster suppliers. Almost without exception, businesses have been using their primary suppliers for more than three years. In addition, the majority of respondents have also been using their secondary and tertiary suppliers for more than three years, the longest timeframe possible of the choices provided.

Consistent product supply also appears important to respondents. Supply consistency was the second most important to respondents of eight possible general attributes, with an average rating of 8.9 (±1.9). Respondents prefer year-round consistent supply to three other possible supply patterns, as shown in Table 3Table 3, while seasonal consistent supply is second most favored.

Potential buyers and non-buyers of Alaskan oysters differ notably in their ability to access product year round. Many of the respondents report problems with their oyster supply during at least a portion of each year. Supply problems vary by region, but the majority of supply problems appear to occur during summer months. Figure 2 shows the number of all respondents reporting supply problems by month.

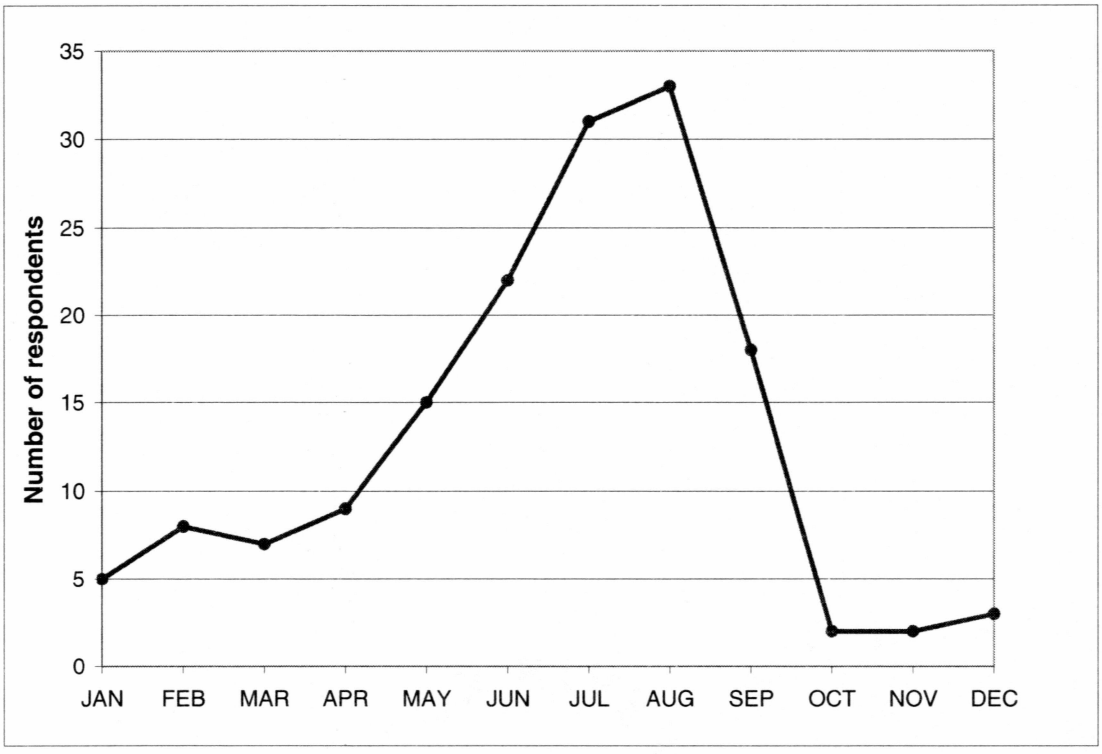

Figure 2. Number of Respondents Experiencing Supply Problems

The potential buyers appear to face greater difficulties with supply than the non-buyers. Only 41 percent of the non-buyers report supply problems with their product, while 53 percent of the potential buyers group reports supply problems. More specifically, the potential buyers report greater trouble with supply in all but the winter months. The percentage of potential buyers with supply difficulties June through

September is 10 percent to 17 percent higher than the respondents in the potential buyers group. In July and August more than 40 percent of the potential buyers report difficulties in supply. A smaller percentage of the non-buyers also experience supply difficulties in the summer months, peaking at 28 percent in August.

Getting product to market quickly appears to be an important and recurring theme throughout the data. Respondents exhibit a strong preference for frequent product delivery patterns, with a majority (53 percent) preferring product to be delivered twice weekly. Another 24 percent of respondents preferred weekly deliver, with only 15 percent preferring daily delivery. One distributor indicated, in a personal interview, that he liked to receive product every three days rather than on a weekly basis. He preferred this delivery schedule so precious shelf life was not squandered holding product in his facility.

Encouragingly, respondents in most regions perceive that the market for oyster product is growing in the area where they do business. Overall, 60 percent of the respondents perceive growth in their area, with another 30 percent providing a neutral response. Only 10 percent of the respondents have a negative response to the statement, "The market for oysters is growing in my area." Table 7 shows respondents' agreement with the statement by division and as an aggregate, with the survey response options "strongly agree" and "agree" grouped as "positive" responses, and "strongly disagree" and "disagree" grouped as "negative" responses.

Table 7. Percentage of respondents agreeing with statement that market is growing

	All Respondents	ESC	Pac	SoAtl	NewEng	Mntn	WSC	ENC	MidAtl	WNC
Positive	60%	100%	73%	72%	67%	67%	50%	33%	25%	0%
Neutral	30%	0%	27%	17%	22%	33%	17%	56%	50%	100%
Negative	10%	0%	0%	11%	11%	0%	33%	11%	25%	0%
U.S. Census Divisions: Mntn=Mountain; Pac=Pacific; ESC=East South Central; WSC=West South Central; WNC=West North Central; NewEng=New England; MidAtl=Middle Atlantic; SoAtl=South Atlantic										

Respondents were also asked about their preferred units for purchasing oysters. The large majority of the respondents had a single preferred option, though 17 percent selected two or more. Purchasing by the 100 count was the most preferred method, with 44 percent of respondents preferring this option. Another 25 percent of respondents preferred purchasing product by the bushel. Table 8 shows the preferred purchase units. Note that the total percentage is not 100 percent as some respondents selected more than one preferred option.

Table 8. Respondent preference for product purchase unit

Product Unit	**Percent of Respondents**
100 ct	44%
bushel	25%
dozen	18%
weight	16%

Producers may consider pricing and shipping schemes that are based on a 100-count rather than a dozen when appropriate to match buyers' experiences.

The Alaskan Actuality

Alaskan producers report that product moved into the continental United States is primarily entering markets in the West, though at least one expressed interest in an executive interview in moving product to the East Coast.

The present research shows that buyers prefer to source oyster product close to home (50 percent of respondents report buying oysters in their home state). The results imply that Alaskans producers would find the greatest opportunities in markets as close to Alaska as is feasible. However, I do note that buyers who are far from actual oyster production may be more willing to purchase Alaskan oysters. A greater percentage of the non-buyers indicated that their businesses are located proximate to oyster production than the potential buyers. Half of the non-buyers indicated they are within 200 miles of oyster production, in comparison to a third of the potential buyers. And nearly 40 percent of the non-buyers are within 50 miles of oyster production, while less than 25 percent of the potential buyers report such proximity. Given this difference, Alaskan producers may find markets in inland states, far from production sites.

Although a discussion of freight and shipping challenges to the oyster industry is beyond the scope of this research, it is important to note that some Alaskan oyster industry participants suggested that their sales regions are limited to the service areas of Alaska's primary commercial air carrier, Alaska Airlines.

The preference for sources close to home may be partly due to the shelf life of oysters. Shelf life is shown to be an important attribute to oyster buyers. Alaskan oysters face several disadvantages in this regard. First, oyster farms are generally located at

remote sites. As a result, product must be transported, typically by boat, to a shipping point. Additionally, air transport in much of coastal Alaska is unreliable because of weather conditions. As a result, product is subject to unpredictable transportation delays. More critical to the product shelf life, however, is the fact that all oysters produced in Alaska face mandatory lot safety testing. When oysters are harvested, a batch sample is submitted to the Alaska Department of Environmental Conservation, where it is tested for naturally occurring marine toxins. The harvested oysters cannot be shipped until testing is complete. The sole ADEC testing facility is located in Palmer, Alaska. As a result, oysters are typically not released for shipment until three days after their harvest date, which means that three days of product shelf life have been expended before the product enters the distribution chain.

Survey respondents who were familiar with Alaskan product provided feedback on their views of Alaskan product shelf life. No respondents reported negative impressions of product shelf life. Instead, 20 percent of respondents agreed that Alaskan product had good shelf life, while 20 percent were neutral and an additional 60 percent did not know. It should be noted, however, than only a single respondent "strongly agreed" that Alaskan product had good shelf life.

Consistent product supply proved important to the respondent group. However, given the remoteness of many of Alaska's growing operations, as well as the role that inclement weather can play in harvesting and shipping activities, Alaskan oyster producers face greater challenges providing consistent supply, relative to producers in other parts of North America. The harvest of oyster product in Alaska has also typically been seasonal,

with harsh weather in late fall, winter, and early spring limiting the feasibility of product harvest. The results clearly indicate that consistent supply, be it year-round or seasonal, is an important factor in buyers' evaluation of oyster product. Likewise, buyers indicated a clear preference for twice weekly or weekly delivery. Therefore, efforts to minimize fluctuations in product supply and provide frequent delivery will likely prove highly beneficial to the industry.

The evidence of longstanding relationships between respondents and their suppliers has interesting implications for the Alaskan oyster industry. Some Alaskan producers, particularly in Kachemak Bay, are already funneling product through a single seller who handles client relationships. Similar arrangements may help promote positive and longstanding client relationships. Attempts to enter markets may also be more successful if the Alaskan industry forms partnerships with distributors or suppliers that are already serving their target market. When this is not possible, personal recommendations or focused efforts to help new customers gain trust and confidence in the supplier may be a critical component of any successful market entry.

Price

The results of the survey show that price is relatively important to oyster buyers, with an average rating of 8.1 (±2.1) in overall importance to the buyer, and 8.9 (±1.3) in importance to the decision to buy (they are the fourth most important attribute in both cases, out of 8 and 13 attributes respectively). Specific pricing goals for Alaskan oysters were outside the scope of this research, but respondents did indicate, as would be expected, that a less expensive oyster is preferred to one that costs more. Price ranges

were rated; the least expensive (less than $2.50/dz) was rated highest with ratings declining in inverse proportion to price. This research did not seek to identify precise pricing targets for Alaskan product.

Alaskan Actuality

Prices for Alaskan oyster product are generally higher than those for most other oysters available in the United States. Although the price range for Alaskan oysters is not likely to change significantly in the near future, it is possible to work to assure the product matches an ideal product profile. In this way, the perceived value of the Alaskan oyster will be as high as possible, meriting a higher price in the mind of the buyer. Respondents were presented with a generic description of Alaskan oysters, which included a price descriptor, at "$4.50 to $6.00 per dozen" (Appendix A).

To gauge the relative desirability of Alaskan oyster to oyster buyers, I asked respondents what kind of premium they would be willing to pay for Alaskan oysters based on their current costs for obtaining oysters. It is important to note that respondents were not asked for actual data regarding their current costs.

One respondent indicated he or she would purchase Alaskan oysters, based on the generic description, at 5 percent above his or her current cost for oyster product; 19 more at 10 percent above their current cost; 5 at 20 percent above their current cost; and 1 at 30 percent above his or her current cost.

Given the high costs of producing Alaskan oysters and the resultant high market prices, that Alaskan oysters producers have limited flexibility when it comes to designing

pricing strategies (such as gourmet versus bargain). High costs and prices drive many elements of the marketing mix in the case of the Alaskan oyster.

Promotion

Product promotion is a complex and multi-faceted activity. Development of promotional strategies can include determining the best tool for communication (print media, direct mailing, personal contact, or others); the target audience (end consumers, distributors, retailers, etc.); the promotional theme (quality versus bargain); and many other aspects.

For the purposes of this research I limit the discussion of promotion to a consideration of those attributes and characteristics of oyster product that should be emphasized or deemphasized by the Alaskan oyster industry in its communications with businesses in the oyster distribution chain. I did not analyze promotional methods used by other oyster sellers or their effectiveness.

Vendor confidence, shelf life and water quality are among those attributes important to a buyer's decision to purchase oyster product (Table 5). Additionally, respondents place high value on their relationships with oyster vendors, supply consistency and product price.

Alternately, respondents place relatively little value on the uniqueness of the oyster product when making their purchase decision. Uniqueness was given an average rating of 7.3 (±2.7), or eighth out of the ten possible attributes contributing to the decision to buy. This was only slightly less important than the geographic origin of product, which received a rating of 7.8 (±2.3).

Strategically emphasizing or passing over certain product attributes in product promotion are valuable as a firm attempts to promote its products.

The Alaskan Actuality

Oyster product can have many strengths and weaknesses. In the case of Alaskan oysters, strengths might include the purity of the water at the point of production, excellent taste and availability during summer months. Weaknesses might include the high cost of production (and subsequent high price), distance from the marketplace, and the unfamiliarity of the Pacific oyster species to many consumers.

In executive interviews, Alaskan oyster sellers consistently identified good taste and excellent water quality as important aspects in their promotional efforts with clients in the continental United States. These statements are borne out by the survey results. Of the respondents who said they are familiar with Alaskan product, 87 percent agreed with a statement that Alaskan oysters taste good. Likewise, 93 percent of familiar respondents agreed that Alaskan waters were pristine.

Marketing Strategy

The success of an individual oyster business will be the result of many factors, including but not limited to the successful marketing and sales of product. The survey findings provide a theoretical profile for a strategic combination of product specifications and business activities that may result in effective marketing and sales of Alaskan oyster product. Given these results, Alaskan oyster sellers may be able to build upon their existing knowledge base and business activities.

Alaskan producers are already well aligned with general preferences for product form. By continuing to move product in a raw form the industry will be able to access the largest segment of the oyster market. Raw product forms receive superior preference rankings when compared to alternate forms. Pairing a raw offering with the most desired oyster size classes — medium (4 to 5 inches long), small (3 to 4 inches) and large (greater than 5 inches) — may create the most desirable product profile for Alaskan oysters.

Additionally, working to match Alaskan production and distribution schedules to the desire of the marketplace may provide benefits for the Alaskan industry. Respondents showed a clear preference for regular product supply. While year-round supply is most highly favored, consistent seasonal supply was also well-received by respondents. Likewise, a strong preference was shown for a frequent product delivery schedule, with the majority indicating that twice-weekly delivery was most preferred, and an additional quarter of respondents preferring delivery on a weekly basis. Frequent distribution of product may prove a valuable business strategy for Alaskan producers.

When selecting target markets, several geographic indicators may be taken into consideration. First is the survey finding that buyers located proximate to oyster production (less than 50 miles) are less likely to consider purchasing Alaskan product. Likewise, buyers tend to source product from regions that are close to their point of business. While buyers may have a favorable opinion overall of product from a specific region, such as Alaska, they are more likely to look close to home for product. This result may lead Alaskan producers to look for markets relatively close to Alaska in places

such as the Pacific or Mountain states, but located outside of the immediate areas of local oyster production. Identifying buyers who are suffering supply problems may also improve producers' success in moving product. Respondents who experience greater supply problems, particularly during summer months, were more likely to be potential buyers of Alaskan product, according to the survey results.

When asked about their *customers'* product preferences about half of the respondents indicated that purchasing locally produced oysters was important to their customers, while more than 80 percent indicated that it is important for their customers to know where oysters are produced. Providing information about the origin of the product may help promote the Alaskan product, particularly if that information is easily passed on to the customer.

Buyers indicated that water quality testing is an important element of oyster quality. Water quality testing at oyster sites in Alaska is required before the sale of product is allowed and is consistent with the standards outlined in the Interstate Shellfish Sanitation Program Manual of Operation (ISSC and FDA (ed.), 1997). Because growing sites receive water quality certifications, Alaskan oyster producers can assure their customers of the safety of the environment in which the oyster was produced.

By targeting markets in areas that are relatively close to Alaska, oyster sellers will also be moving product into areas where respondents report the market for oysters is growing. The majority of respondents in the Pacific and Mountain states (73 percent and 67 percent, respectively) report that markets are growing in their regions. If producers prefer to move product into other areas they may choose to avoid areas such as the

Middle Atlantic and East North Central census divisions, where lower percentages of respondents report market growth. Producers may benefit by selling into markets that are already growing, as entry and competition may not be as difficult as in stagnant or shrinking markets.

Alaskan oysters sell for prices that are higher than those preferred by oyster producers. Given the geographic and structural limitations to bringing the price down at the current time, producers may do well to align their product offering with the preferences of the marketplace so the perceived value of the product is as high as possible.

The research identified several key areas that may strongly affect buyers' perceptions of product and their willingness to purchase oysters. These key areas include the buyer's confidence in the vendor, the reliability and regularity of supply, and the shelf life of the product, as well as others. Alaskan oyster producers may find that resources invested in developing and maintaining their company's good reputation may prove very beneficial over time, and may increase the perceived value of their product. Similarly, developing distribution systems that assure regular and reliable product delivery and highlighting product strengths such as water quality may raise the perceived value of their product.

This research identified areas in which Alaskan oysters already have perceived strengths, such as water purity, shelf life, and taste. The research finds that Alaska is favorably perceived as an area of origin for oyster product. This positive evaluation of Alaskan product by oyster buyers who are familiar with the product may provide the base for some marketing activities. The attributes of shelf life, taste and water quality may be

areas in which positive inroads can be made in print literature, earned media or direct communication work. Building upon existing preferences and beliefs might prove valuable to the industry, resulting in an eventual product pull, in which customers are actively seeking the Alaskan product, rather than a push, in which sellers must introduce and encourage the product in the marketplace. By maintaining and promoting perceived strengths, the industry may be able to take advantage of its existing image and accomplishments.

CHAPTER 4: COOPERATIVES

The last several decades have witnessed a shift in the way that products, including food products, are marketed and sold. In the first half of the 20th century, marketing was inwardly focused, toward a company's production and the subsequent sale of product. In the second half of the 20th century, however, businesses began to shift their orientation and focus outward, toward the consumer and his or her needs (Boone and Kurtz, 2001.) Eventually, affluence in the developed world increased to the point that consumers no longer seek to fulfill needs, but rather base their consumptions on wants or desires.

In addition to changes in marketing strategy, the actual structure of the food supply chain has undergone significant changes in recent years and is increasingly characterized by vertically integrated systems and consolidation of firms. Ownership often extends beyond traditional roles of "harvester" or "processor" or "retail store" to include multiple functions within the same organization. Consolidation, at all levels of the food supply chain, creates economies of scale and allows for the combination of business functions, such as product distribution or advertising contracts. However, economics do not provide the only reasons for consolidation. Affluent consumers in developed countries have access to a greater variety of products and information and demand higher quality or value-added products (Bredahl et al., 2001). Large consolidated retail firms are able to contract with suppliers for specific product qualities and attributes. Likewise, consolidation in the production and processing sectors provides opportunities for investment in value-adding activities such as quality control schemes, brand development

or specialized processing. In general, integrated firms wield greater power throughout the food supply chain.

To adjust to these structural shifts, companies increasingly rely upon product differentiation, superior quality offerings and innovative product development to assure their continued role in the marketplace (Hendrikse and Bijman, 2002). Unfortunately, the trend toward integration also has led to the destabilization of smaller independent food businesses. Today, matching company functions and products to consumer need is considered an essential element of successful marketing and sales.

In order to remain competitive and viable some small suppliers in the food industry seek to form cooperatives or joint ventures to provide economies of scale and to enable them to meet volume demands and other requirements of consolidated food retailers (Kaufman, 2000). Cooperatives can provide advantages in production volumes, cost-cutting through shared business functions, opportunities for collective investment in value-adding functions, or development of niche markets. Cooperative structures may allow some small-scale producers to continue to compete effectively in today's food supply chain.

As the Alaskan oyster industry develops and more mariculture operations come online, oyster producers will increasingly seek markets for their product outside Alaska. This expansion of market reach outside of Alaska and into the general United States food supply chain will demand adaptations and new techniques from the industry to help the product succeed in the marketplace. One purpose of the present research on oyster markets was to examine whether market preferences for oyster product have any

implications on the development of cooperatives in the Alaskan oyster industry. Would efforts to match production to the preferences of the marketplace be well served by the formation of a cooperative or growers association? Are there advantages to these structures that might prove useful to the industry? Or, given the market data is there any indication that cooperative development might be an unwise investment by the industry?

COOPERATIVES IN MARICULTURE, AGRICULTURE AND FISHERIES

In the fishing and aquaculture industries, as in the agriculture sector, a cooperative can be loosely described as any collective organization that is designed to confer greater power, benefits or services to its members or participants than could be achieved through individual or independent means. The cooperative is an extremely diverse organizational structure with myriad variations possible to meet the needs of each group of members. The agricultural cooperative has a long history, both in the United States and abroad. Likewise, cooperatives in U.S. fisheries have existed at least since the early 1900s (Garland and Brown, 1985).

The shellfish mariculture industry has parallels to both agriculture and capture fishing industries. A core of valuable research exists addressing traditional capture and mariculture cooperatives. Because of theoretical and structural similarities between mariculture, agriculture and capture fisheries— three commodity based food industries— researchers seeking information on mariculture can look to cooperative literature on the seafood and agriculture industries for additional guidance.

Seven types of fishermen's cooperatives have been identified by Pollnac (1988), providing different types of benefits or services to members. These include supply

cooperatives, through which members access production inputs, such as gear, refrigeration or bait; marketing cooperatives, which members use to collectively market product; credit cooperatives, which aid small-scale fishermen in the procurement of credit; production cooperatives, in which fishermen collectively harvest the fishery resource; and service cooperatives, which are used to procure such services as insurance, moorage and storage; and multipurpose and umbrella cooperatives, both of which provide a combination of the services listed above.

Cooperatives can be organized formally or informally. Laws in many states and countries, including Alaska, provide legal frameworks for formal cooperatives (Pollnac, 1988). A cooperative organizational structure can bring provide many advantages to a group of fishermen or mariculturists. The structure also has certain disadvantages that warrant consideration.

The literature on agricultural cooperatives describes many different types of cooperative structures with a diversity of goals including, for example, increasing profits, gaining bargaining power or economies of scale in production or product sourcing, or developing new or niche markets for members' products. Peterson and Anderson (1996) describe twelve basic theoretical strategies employed by agricultural cooperatives, which fit into two super-categories: risk-management strategies and returns strategies. A risk-management strategy is one intended to help control the risks associated with the business, including variable prices, environmental fluctuations, dealing in perishable goods, or bargaining with monopolistic suppliers or buyers. A returns strategy is one intended to help increase the value of the product. Examples might include cooperative

investment in production or processing capacity, development of new or improved markets, or using the benefit of increased product volumes to achieve economies of scale in purchasing or sales. Jentoft and Davis (1993) describe similar benefits of cooperative development in the capture fishing industry, including:

> [The] capture of economic values created by processing and collective marketing, access to lower cost goods and services, achievement of "voice" and leverage concerning conditions affecting livelihoods, representation within local and external decision-marking forums, and freedom from the often draconian control exercised over small boat fishers by ocean resource buyers, processors, brokers, and marketers.

There can be disadvantages to a cooperative structure, as well. The efficiency of traditional cooperative structures in the newly integrated and fiercely competitive food supply system has been increasingly questioned, as the traditional structures are not conducive to investment in the assets and activities necessary for success in the evolving agrifood structure (Hendrikse and Bijman, 2002; Chaddad and Cook, 2004). One of the difficulties most frequently cited in cooperative literature is the difficulty faced by cooperatives in securing investment capital from outside the cooperative. Additionally, traditional cooperative structures have not included appreciable ownership rights, meaning owner-members have no claim on future profits of the organization. This characteristic can discourage growth-oriented investment, as those individuals with investment capital are reluctant to invest it within the cooperative, where they have limited ownership and control over the investment (Chaddad and Cook, 2004). Decision-

making processes within a cooperative can also be cumbersome, with the manager or director accountable to a full board of directors, as well as the cooperative membership. This compares to the private business sector where chief operating officers are generally empowered to make strategic decisions more freely.

Innovative organizational structures have been developed to enable cooperatives to access growth capital for investment in "growth related strategies… [such as] value-added processing, brand name development, and entry into international markets" (Chaddad and Cook, 2004).[4]

Another change comes in the control granted to members. The conventional organizational structure of "one member, one vote" has been replaced in some cases by a system in which a participant's influence on the organization is relative to the amount of product the participant moves through the organization's channel (Geier,2004).

The term "growers association" has been used to describe a newer model of agricultural organization. Hendrikse and Bijman (2002) describe one such organization in the agricultural sector in the Netherlands. The fruit and vegetable producers' organization forward integrated into the wholesale sector. They also established systems that enabled contracting between growers and wholesalers in order to operate more efficiently in the dynamic food supply environment.

Growers associations (GAs) can be either heterogeneous or homogeneous. Heterogeneous GAs comprise producers whose product covers a range of quality

[4] Chaddad and Cook provide an excellent examination of new cooperative models designed to address investment and equity procurement needs of cooperative organizations in the industrialized agricultural sector. Their paper provides a valuable examination of organizational options to producers considering cooperative development.

offerings, whereas homogeneous GAs comprise high-quality producers who have joined together to benefit more fully from their extra efforts in producing a quality product (Hendrikse and Bijman, 2002). To illustrate this difference within the context of the Alaskan oyster industry, consider a hypothetical GA that carries oysters from a number of growers with varying quality standards, depending on the regularity and rigor with which they care for their oysters. The variety in producer commitment results in a broad range in oyster quality (characterized by cleanliness, cup depth, and shape, for example); a GA comprising this mix of qualities and standards would be considered heterogeneous, as the product is not of uniform quality. A homogeneous GA, on the other hand, would comprise growers who are exacting in their regular handling, sorting, and cleaning of oyster product, resulting in hardier, better-shaped and more uniform oyster product.

A heterogeneous GA offers bargaining advantages, because the group includes a large portion of producers and holds power relative to wholesalers or other middle markets. This is strategy is known as countervailing power and is employed to counter the market power of an entity higher up the supply chain (Peterson and Anderson, 1996). Nevertheless, Hendrikse and Bijman (2002) argue that under most circumstances higher quality producers will tend to group together into homogeneous GAs for several reasons, including their ability to drive lower quality producers from the marketplace and thereby decrease competition, and their ability to extract additional value for the effort in producing a quality product.

The Alaskan Context

Several cooperatives exist in the Alaskan mariculture and wild capture fishing industries. These cooperatives range in purpose and legal structure, from marketing cooperatives whose intent is to more effectively move seafood product into the marketplace; to production cooperatives mandated in fishery regulation. Some of the organizations are relatively new, born in the last few years, while others have long and distinguished traditions in the state. I will briefly examine a few of these organizations.

The Seafood Producers Cooperative is an organization with member fishermen along the entire Pacific Coast of the United States. The SPC was founded in the 1940s and has operated a processing facility in Sitka, Alaska since 1981. The SPC is a multipurpose cooperative, acting as a clearinghouse and collective sales organization for member fishermen, as well as providing services such as cold storage and ice.

The Chignik Cooperative is another multipurpose cooperative made up of salmon harvesters in the Chignik salmon management area. The Chignik Co-op acts as both marketing and production cooperative. The production aspect of the cooperative was established through state regulation. Members benefit from economies of scale brought to play through the replacement of a large fishing fleet with a few vessels harvesting salmon on behalf of all members. In addition, the cooperative markets the salmon on behalf of the members, attempting to establish new, higher value markets for the salmon product.

The Kachemak Bay Shellfish Growers Association is a cooperative of shellfish mariculturalists in the Kachemak Bay area. It is multipurpose, doubling as a marketing

and service cooperative. The cooperative is organized under the Alaska Cooperative Corporation Act (Alaska Statute, Chapter 10.15). The cooperative has collective ownership of nursery facilities for growing shellfish spat to out-planting size. In addition, a single representative sells oysters on behalf of the cooperative members.

Finally, production cooperatives play important roles in herring fisheries around the state of Alaska. Though not formally organized, these joint venture agreements allow a small number of boats will harvest herring on behalf of all permit holders in a given fishery. This technique has proved important for fishery management, as fisheries can be prosecuted that would be unsustainable in a competitive environment.

This is not a complete catalogue of cooperatives in the state of Alaska. Rather, it's a snapshot of some of the kinds of cooperative relationships that exist in the seafood industry. Cooperatives also exist in many other businesses in the state, many of which may prove instructive for people interested in cooperative development in Alaska.

As the Alaskan oyster industry develops, it faces challenges particular to the Alaskan geography and business models. Alaskan oysters are produced in remote locations, and farms are generally operated by an owner/operator and a small group of employees or family members. Harvest is subject to some restraints, among them the weather, and is generally seasonal. The remoteness of the sites, distance from final markets, and other factors have led some oyster producers to develop or consider developing cooperative business structures to meet various needs in the production and marketing chains.

Industry participants report a range of quality offerings from the diverse producers around the state. The variability of quality stems largely from the regularity with which

the producer tends to his oysters, as regular oyster care and site maintenance contributes significantly to the development of desirable physical attributes (RaLonde, 2004). Presently, no compulsory grading standards exist in the industry.

Food safety, on the other hand, is closely monitored. Mandatory post-harvest government food safety testing is conducted on every batch of oysters harvested from Alaskan waters. After a grower harvests oysters from the cultivation site, a sample of the oyster meat is taken from the batch and sent to the Alaska Department of Environmental Conservation testing laboratory in Palmer, Alaska, where it is tested for marine toxins, including those that cause paralytic shellfish poisoning (PSP). The toxins are a normal by-product of the of dinoflagellate algae, which occur naturally in the marine environment (RaLonde, 1996). The algal blooms, commonly known as red tide, can occur seasonally in Alaska, and all shellfish commercially harvested in the state are subject to testing for the toxins. During the time that the ADEC is testing the oyster product, the oysters from that harvest batch are held in storage by the harvester, subject to test results. Testing generally is complete within three days of harvest, at which point, in absence of PSP toxins, the product is released and can be sent to market.

The general model for Alaskan oyster mariculture businesses is that of the owner/operator, where an individual or family handles all aspects of the oyster business, from cultivation and harvest of the oyster to bookkeeping and business development, to marketing and sales. In some cases producers have formed extended business relationships to share responsibility for some of the business activities or to provide contract services or networks. For example, one Alaskan harvester contracts out his

services in net cleaning and maintenance to others located nearby. In a pair of examples, producers have established joint marketing and sales, as well as production capabilities, through two small cooperatives. The Kachemak Bay Shellfish Growers Association sells product for 12 growing operations, and operates a shellfish nursery to raise oyster seed to the appropriate size for out-planting to the mariculture sites (RaLonde, 2004.) In Prince William Sound, several growers move product through a single representative in order to improve access to the market (Chipman, 2004).

The present research examined market preference for oyster product and considered the potential benefits or disadvantages of cooperative development based on the preference data.

CHAPTER 5: IMPLICATIONS OF SURVEY RESULTS FOR COOPERATIVE DEVELOPMENT

This survey of 87 oyster businesses in the United States shows that oyster buyers in the United States prefer certain intrinsic and extrinsic product attributes over others. The Alaskan industry may benefit from an analysis of its ability to match these marketplace preferences, both as individual sellers and possibly as cooperative organizations. The present research is intended to identify those market characteristics that may have implications for cooperative formation.

Survey results were examined using the rubric of the "4 Ps of marketing": product, placement, price and promotion. Survey respondents showed clear preferences for a variety of key oyster product attributes. For example, results show that respondents place highest importance on their relationships with and confidence in the oyster vendor; and that taste, water quality at the point of production, and price also contribute to their overall assessment of product. Respondents are more likely to consider purchasing Alaskan oyster product when they experience supply problems at some point in the course of a year. As expected, respondents prefer lower prices in general, though respondents with supply problems are more likely to consider Alaskan product with its relatively high prices than other respondents. Finally, Alaskan oysters have perceived strengths in the areas of water quality at the point of production and overall product quality. These are among key aspects that might be emphasized in the industry's promotional activities.

A business's ability to synchronize its product offerings with the market preferences may have implications in a consideration of forming cooperative partnerships. In particular, a business's ability to establish a good name and reputation, fill supply gaps and provide a consistent supply schedule may play into decision-making processes about cooperative formation.

Establishing a Good Name

Survey respondents were asked to assign rankings to ten product attributes that affect their decision to purchase oysters. Of the ten attributes, confidence in the vendor earned the highest average ranking placing it higher than other attributes such as taste, price and year-round availability. This would indicate that the perceived reliability of the vendor is a critical aspect of oyster sales.

Producers may evaluate how well they are able to provide customers with services and qualities that will cultivate the development of trusting business relationships. These qualities may include reliable delivery schedules, reliable product classes and consistent production schedules. They may also include less tangible qualities such as having sales personnel regularly accessible to customers, having good charisma or interpersonal skills, or having the ability to impart product information to customers in a way that satisfies their needs.

The importance of vendor/customer relationships is demonstrated by the longevity of relationships between respondents and their suppliers. The majority of respondents indicated that they have been working with their primary, secondary and, in some cases,

tertiary oyster suppliers for three or more years. Figure 3 illustrates the duration of these relationships.

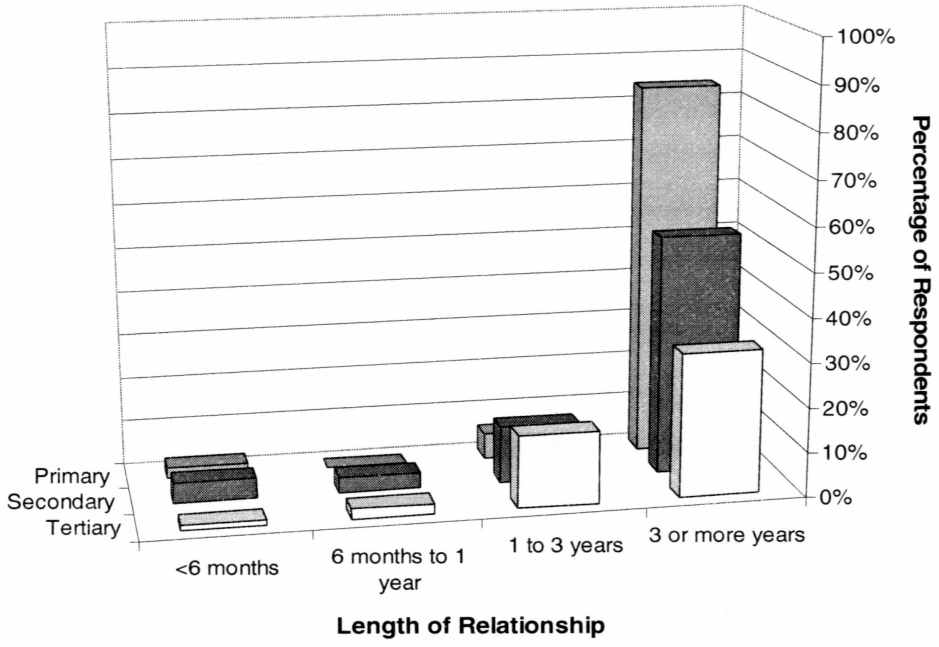

Figure 3. Duration of respondents' relationships with their current oyster suppliers

The reputation of any business is one of its most critical assets. Alaskan producers may find it difficult to attract the interest of new customers because of the established relationships. In order to access new markets, Alaskan producers may seek to establish relationships with existing suppliers and insert their product in the marketplace through existing supply channels. Producers' analyses of possible partnership or cooperative formation would likely benefit from an examination of the most effective manner in which to develop and maintain a strong reputation and positive image.

Implication for Cooperative Development

Alaskan oyster producers may consider partnerships or cooperatives if representation by a single vendor or vendor group will enhance their relationships with their customers. Likewise, a cooperative or partnership may also prove beneficial if it improves the producers' ability to establish relationships with existing oyster suppliers.

The Alaskan oyster industry faces structural specificities, such as remote growing locations and the owner-operation business structure, which can make it difficult for the primary producer to maintain excellent availability for his or her customers. In addition, some growers may find that they excel at product production more than customer relations. To the extent that growers find it challenging to be adequately available to their customers, or find that their skills as producers surpass their skills in customer relations, the shared marketing channel of a cooperative structure may prove beneficial.

Filling in the Supply Gaps

Respondents were presented with a generic description of Alaskan oysters that included information about price and water quality and were asked to choose from three additional attributes to round out the preferred product to match the price. Respondents were also able to indicate a percentage increase above their current oyster prices that would be acceptable for Alaskan oysters. Finally, they were given the option to indicate they would not purchase Alaskan oysters. From these responses I was able to break the respondent group down into two basic subsets: those who would consider purchasing Alaskan oyster product; and those who would not. I refer to respondents who indicated

they would not purchase Alaskan oysters as non-buyers. I call the other respondents potential buyers.

Responses from non-buyers and potential buyers are similar in most ways. They assign comparable ratings to attributes such as taste, water quality and shelf life. They appear to be similarly engaged in the different levels of the supply chain, including distribution, retail, and processing. Their ratings of different product forms are very similar.

One significant exception to the homogeneity of the responses from non-buyers and potential buyers, however, is in the area of supply consistency. Potential buyers (those respondents who do not explicitly state that they will not purchase Alaskan product) appear to be subject to greater difficulties sourcing oyster product year-round. A greater percentage of the potential buyers experience supply problems between the months of March and September. Figure 4 shows there is a 3 percent to 17 percent difference in the percentage of respondents with supply problems between the two groups, with the greatest differences occurring in the summer months of June through September. The peak in supply problems is consistent with the spawning patterns of Pacific oysters in Washington, Oregon, and British Columbia. It also may correspond with seasonal outbreaks of red tide in other oyster producing areas of the United States (Texas Parks and Wildlife, 2004; Massachusetts Department of Public Health, 2004; Maine Department of Marine Resources, Public Health Division, 2004).

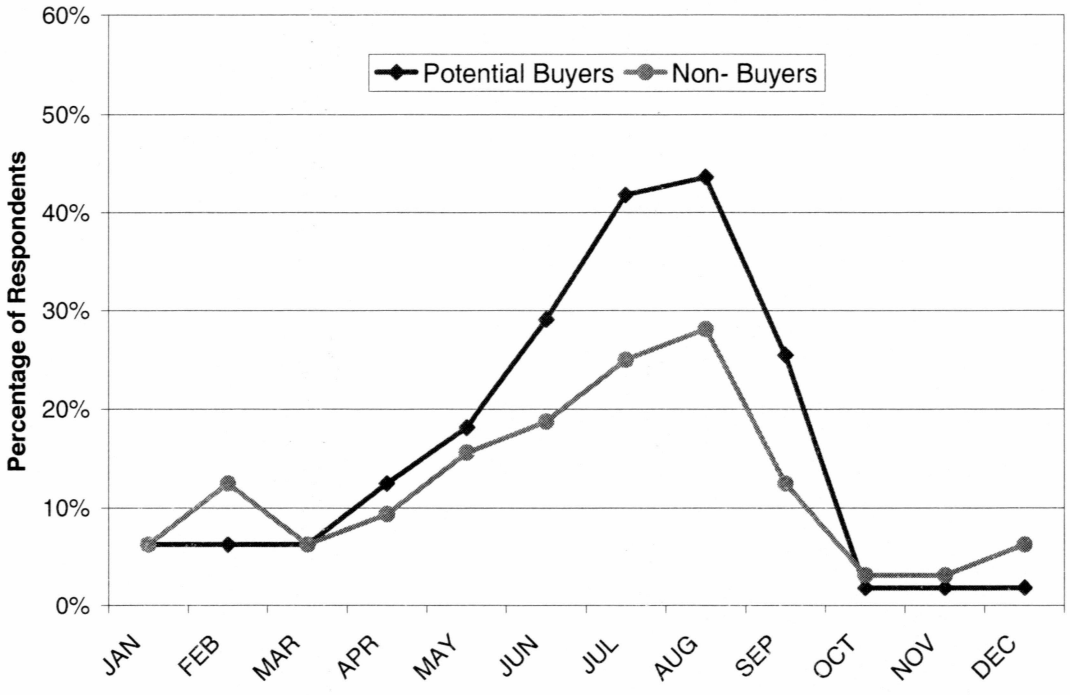

Figure 4. Percentage of Non-Buyers and Potential Buyers with Supply Problems

Alaska's production of oysters is generally uninterrupted during these months, though in some regions oysters may experience pre-spawn physiological changes. These results would suggest that identifying businesses or regions that are subject to supply challenges could provide an opportunity for entrance to new markets. With production from roughly April through September, there may be opportunity for Alaskan oyster producers to help fill the supply gaps in the oyster market.

However, the results show that supply consistency is a relatively important product attribute for both non-buyers and potential buyers, when compared to other attributes such as product form, price, oyster size, region of origin, and method of production. Only confidence in vendor and shelf life appear to be more important. Furthermore, as

shown in Table 9, respondents in both groups prefer year-round consistent supply, followed by seasonal consistent supply, to other supply options. Non-buyers, however, rank seasonal consistent supply substantially lower than the potential buyers. This may indicate that the desire for a regular, year-round supply of product is a significant factor in the willingness of buyers to try Alaskan product.

Table 9. Potential buyers' and non-buyers' preferences for supply schemes

	Potential Buyers	Non-Buyers
YRCS	8.7	8.6
SCS	7.1	5.9
YRIS	5.6	4.5
SIS	5.5	4.3

YRCS= Year-Round Consistent Supply
SCS= Seasonal Consistent Supply
YRIS= Year-Round Intermittent Supply
SIS= Seasonal Intermittent Supply

Interestingly, potential buyers are more likely than non-buyers to have formed new relationships with suppliers in recent years. Figure 3 showed that the average respondent has longstanding relationships with their primary, secondary, and tertiary oyster suppliers. However, closer examination reveals that nearly 15 percent of the potential buyers have relationships of less than a year in duration with their secondary suppliers, with 10 percent of those relationships being less than six months old. This may reflect the difficulties these respondents have procuring a consistent supply of oysters, or their willingness to sample different products and different suppliers. By comparison, not a single non-buyer has a relationship with any supplier less than a year in duration.

Implication for Cooperative Development

There is marked seasonality in the availability of Alaskan oyster product. In addition, some Alaskan producers may also have difficultly providing consistent supply in the course of the normal harvest season.

The ability to provide consistent supply to respondents in the potential buyers category may be enhanced by the formation of cooperatives or partnerships. Providing customers with a consistent supply of product, year-round or seasonal, may lead to a stable relationship with the buyer, possibly characterized by longstanding sales relationships.

Product Delivery Schedule

Survey respondents indicated a strong preference for product delivered twice weekly. As was indicated by one distributor, a regular delivery schedule aids in the maximization of shelf life, as shelf life is not squandered holding product at the business before sale. More than 50 percent of the respondents preferred delivery twice weekly, and an additional 24 percent of the respondents preferred product on a weekly basis.

The great majority of respondents prefer products to have a long shelf life, with 85 percent of respondents preferring a shelf life longer than 7 days.

Implication for Cooperative Development

Alaskan oyster producers may consider partnerships or cooperatives in order to meet a regular delivery schedule and to pair it with the ability to provide product with a long shelf life.

Price

Alaskan product is currently extremely expensive relative to oysters produced elsewhere in the United States and Canada. Shipping costs, production technique and rural production combine to produce a very high bottom line for oyster producers.

Survey respondents report that price is an important factor in their general evaluation of oyster product and their decision to actually purchase oysters. The oyster industry in Alaska consists of dozens of small owner-operators. The ability of producers to achieve economies of scale is limited by the size of their operations.

Implication for Cooperative Development

Combining business functions through the development of cooperatives may allow relatively small production operations to achieve economies of scale. A cooperative can address a number of different business functions, including production, marketing or purchasing. Economies of scale may not be possible for all functions of every oyster operation, but producers may benefit in some areas of their business through cooperative development.

CHAPTER 6: CONCLUSIONS AND FURTHER RESEARCH

This paper reports on preliminary market research into potential markets for Alaskan cultured oysters in the continental United States. The market survey data shows strong preferences for a variety of intrinsic and extrinsic oyster product attributes including consistent supply throughout a year or a season, government safety certifications and consistent delivery schedules. In addition, respondents identified vendor confidence, taste, water cleanliness and price, among other attributes, as important elements in their decisions to purchase product.

I also examined the role of cooperative organizations in the production and marketing of agricultural and seafood products and possible benefits of cooperative development in the Alaskan mariculture industry. Cooperative organizations are commonly utilized by farmers and, to a lesser extent, fishermen and mariculturalists to help them achieve a variety of business objectives. These objectives might include achieving economies of scale in purchasing or marketing, gaining bargaining power through increased product volumes, or acquiring services such as insurance and discounted group rates, among others.

The market data lead us to believe that certain marketplace preferences may be better served by a group of many producers than by many independent businesses. Specifically, consistent supply may be better provided by an organization that has access to multiple sources and higher volumes of product. In addition, the increasing consolidation and vertical integration of the food industry has driven many small-scale food producers to seek out niche or high-value markets and to use value-adding techniques to access these

markets. Some of the important tools used in these efforts include brand development and value-added processing (Chaddad and Cook, 2004).[5] These tools are oftentimes expensive to develop, however, and efforts in this direction might benefit from a larger base of investors, possibly provided through a cooperative structure.

Recommendations on the specific structure of a cooperative in the Alaskan oyster industry are beyond the scope of this thesis. Volumes of literature exist on nuances in organizational structure in cooperatives. Additionally, cooperative organizations are in flux around the world as food producers adapt to shifts in the food supply chain. A host of new cooperative models have been implemented in recent years in response to the industrialization of agriculture. Although diverse in their specifics, the new models share the common objective of providing a structure that allows organizations to acquire risk capital for growth projects (Chaddad and Cook, 2004).

Ultimate decisions as to cooperative structure will vary depending on the objectives and personal financial situations of potential member businesses. Critical to this decision making process are discussions of organizational goals. Should the cooperative provide production infrastructure to its members and, if so, how will its construction be financed? Should members' shares of the cooperative be transferable? Should increases (or decreases) in the value of the organization appreciate to shareholders? Should there be mechanisms to allow outside investment in the cooperative or should investment capital

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[5] This research indicates that buyers primarily seek whole oyster product for consumption on the half-shell. Nevertheless, value-adding processes are being developed to improve the safety and convenience of "raw" oyster product. While value-adding to a "raw" product may seem counterintuitive, such processes may prove important in the marketplace in coming years. For examples of oyster value-adding, see Gold Band Oysters at www.theperfectoyster.com and the ongoing research of Linda Andrews, Mississippi State University.

be restricted to the contributions of members? Should the votes of all members count equally, regardless of product contributed to the cooperative, or should influence be relative to participation in the organization?

For producers considering cooperative development, a realistic discussion of goals and expected services from the cooperative must be undertaken early in the development phase. For example, given a finite amount of investment capital, do members prefer to develop a centralized storage facility, or to hire a director and develop promotional materials like brochures and labels? Researchers from the University of Alaska Fairbanks have examined the history of agricultural cooperatives in Alaska and have noted patterns of organization failure (Lewis et al., 1996). They posit that these failures were not due to flaws in the cooperative business organization as a model. Rather, they attribute the failures to unrealistic expectations of cooperative services and goals by founders. They also note that a strong foundation of financial discipline in member businesses is an essential, and oftentimes lacking, component of a successful cooperative organization.

Understanding the factors associated with success or failure of cooperatives provides potential cooperative members with valuable tools for strategic planning and decision making. It also helps identify potential pitfalls or strengths a cooperative might face. Much of the research on capture fishery and mariculture cooperatives was conducted in developing countries. Nevertheless, the research provides useful insights into some of the structural and social elements of cooperative development in the seafood industries,

especially given the underdevelopment of Alaskan transportation, manufacturing, and business infrastructure.

One strong indicator of cooperative success is the degree of involvement of the harvesters in the development and functioning of the organization (Pollnac, 2003). Though this may seem self-evident, many of the harvesters' organizations analyzed in the literature have been the result of economic development initiatives or similar programs. Pollnac reanalyzed the data from a 1985 United Nations Food and Agriculture Organization study and found that organizations that were characterized by strong harvester involvement in decision making were 2.5 times more likely to be classified as successful.

Pollnac (2003) also examined the cases of two fishermen's cooperatives in the northeastern United States. Both cooperatives operated successfully for many years before eventually failing. In both cases, failure was partially attributed to overcapitalization by the cooperative. In the case of one of the facilities, management problems and the organization's inability to pay harvesters quickly for large deliveries of product may have contributed to its failure. Still other research has pointed to the individualism of fishermen as a problematic and often destructive for capture fishermen's organizations (Jentoft and Davis, 1993; Pollnac and Poggie, 1991). This may be an important factor for Alaskan oyster mariculturalists: researchers at the University of Alaska estimate that 60 percent of current participants in the Alaskan oyster industry are or were capture fishermen, as well.

Importantly, Pollnac and Poggie (1991) argue that significant distinctions exist between wild capture fishers and mariculturists:

> Capture fishermen harvest their prey from the wild, while mariculturalists grow their "crop" as does a farmer. Capture fishermen must look for the prey and are faced with a great deal of day-to-day variability. In contrast, mariculturalists grow the product, and if all goes well they are assured of a harvest all at one time, just like farmers. Mariculturalists, like farmers, own or have individual rights to their areas of the shore of ponds. In contrast, marine fishermen for the most part exploit a common property... although for the most part access provides rights — the first boat on the fish has rights to them.

Pollnac and Poggie (1991) criticize development policies that have treated organizations serving the two groups similarly, and posit that very different means must be exercised when organizing the two types of harvesters into cooperatives. In particular, the authors note that the success of wild capture fishers' cooperatives is strongly predicted by organizations' promotion of a social bond between fishermen. Examples of organization activities that would promote social solidarity would be maintaining a clubhouse or sponsoring group activities. Long-term success for mariculturalists' cooperatives, on the other hand, is more strongly predicted by the effectiveness of the organizations' managerial structure and functions. In other words, running a cooperative as a well-functioning business is critical to its success in the mariculture industry, while providing opportunities for fishermen, whose livelihoods otherwise tend to encourage

individualism and competitiveness, to come together as a interdependent group is more important to the long-term success of a capture fishermen's cooperative.

Oyster producers considering development of cooperative associations might do well to examine their own senses of individualism or solidarity and that of other potential cooperative members and take research on success and failure indicators in capture fisheries and mariculture into consideration. Are there compelling reasons to use a cooperative structure? Or is there potential for greater success through private partnerships?

FUTURE RESEARCH

The University of Alaska Fairbanks continues to conduct multi-disciplinary research on oysters produced in the Alaskan mariculture industry. Research goals include assessing the safety and quality of the Alaskan product through microbiological analysis; examining intrinsic quality through analysis of such variables as lipid and fatty acid content, glycogen content, and others; and examining production cycles for Alaska's different oyster producing regions. One of the intentions of the research is to identify possible variations in the product profiles across the various regions of Alaska and to assess the possible implications of such variations for marketing activities.

The results of the ongoing research may influence producers' consideration of cooperative development. For instance, regional variations in the seasonality of production may motivate producers to team up to extend the season of Alaskan product. Or, the identification of distinct intrinsic qualities between regions might discourage cooperative development because of problems posed by the lack of uniformity.

This research indicates that buyers who face supply difficulties may provide market opportunities for the Alaskan industry. Additional research focused on isolating such buyers could help the oyster industry focus their marketing efforts in geographic areas.

It is possible that Alaskan producers would better be able to meet the delivery schedule expectations of oyster buyers' through a cooperative structure. With access to greater product volumes and production from many farms the producers may be able to reduce peaks and troughs in supply. Achieving consistent shipping patterns may prove difficult, however, given the geographic and meteorological restraints of doing business in Alaska. Research into freight consolidation possibilities in the oyster producing regions would likely prove extremely beneficial and may help the industry reduce a significant cost of producing oysters in rural Alaska.

The cooperative organizational structure may present many benefits to the Alaska oyster industry. Combination of efforts by a number of small, independent producers could help members move product into larger markets and could focus disparate marketing efforts behind a shared group of goals. In the development of a cooperative, care should be taken to clearly outline goals, expectations and responsibilities. Efforts should be made to identify realistic objectives to guide the work of the organization. Attention should also be paid to existing research into success and failure indicators in capture fishery and mariculture cooperatives. Additionally, potential cooperative members will benefit from a careful consideration of all possible forms of organization, including various cooperative structures as well as private partnerships, in order to best match participants' goals and objectives with an appropriate organizational form.

Marketing Alaskan oysters presents many challenges. The unique characteristics of Alaska's environment, transportation systems, rural economies and geography ensure that the production and marketing of seafood products are a constant challenge. Nevertheless, an understanding of marketplace expectations for product and a creative approach to business structures and business-to-business relationships enable oyster producers to achieve commendable successes in their businesses. It is my hope that the information provided in this thesis will assist the industry in future growth and accomplishment.

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APPENDIX

SURVEY OF OYSTER INDUSTRY PARTICIPANTS:

MARKET POTENTIAL FOR ALASKAN OYSTERS

FISHERY INDUSTRIAL TECHNOLOGY CENTER

UAF UNIVERSITY OF ALASKA FAIRBANKS

School of Fisheries and Ocean Sciences
University of Alaska Fairbanks
118 Trident Way
Kodiak, AK 99615
(907) 486-1503
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This survey solicits your opinion about oyster product and marketplace characteristics.

The confidentiality and anonymity of your responses will be strictly guarded.

Section A

This section asks you questions about your opinion of various qualities and attributes of oyster product.

Part I: Your Business

1) In which state/province (Oregon, Colorado, etc.) is your business located? _____

2) What market (city, region, etc.) do you serve? _____

3) For how many years has your business been handling oysters? _____

4) How do you source oysters? *(Please circle one)* PRIMARY PRODUCERS DISTRIBUTORS OTHER

5) I carry the following products

☐ Pacific (Wild) Salmon	☐ King Crab	☐ Bay Scallops
☐ Atlantic Salmon	☐ Dungeness Crab	☐ Pollock
☐ Clams	☐ Weathervane Scallops	☐ PEI mussels
☐ Cod	☐ Sole	☐ Green Lip mussels
☐ Tuna	☐ Lobster	☐ Puget Sound mussels
☐ Halibut	☐ Rockfish	

6) We would like to know how you would rate the relative importance of the following supply chain activities to your business. Please rate the importance of each activity to your business using any number from 1 to 10, using the following for reference. Any number can be used more than once.

10 = most important; 5 = Neutral; 1 = Least important

___ Harvesting/Growing	___ Distribution/Wholesale	___ Processing
___ Import	___ Export	___ Retailing

Part II: In Your Expert Opinion

7) We would like to know how you would rate the **relative importance** of the characteristics of oysters listed below. To rate each characteristic use any number from 1 to 10 using the following for a reference. Any number can be used more than once.

10 = Most important; 5 = Neutral; 1 = Least important

___ Supply Consistency	___ Oyster Size
___ Price	___ Product Form (Frozen, Raw, etc.

___ Method of Production	___ Region of Origin
___ Shelf Life	___ Confidence in Vendor

8) As you did above, please rate each of the following attributes of oyster product on a scale of 1 to 10, where 10 represents the most important or desirable attribute and 1 represents the least important or desirable. ***Please place a value in EVERY blank.*** Again, equal ratings are fine.

1. Supply consistency
___ Seasonal (April to November) Consistent Supply
___ Seasonal (April to November) Intermittent Supply
___ Year-round, Consistent Supply
___ Year-round, Intermittent Supply

2. Oyster Size
____ Yearling (Up to 2 in./5 cm.)
____ Extra Small (2 to 3 in./5 to 7.6 cm.)
____ Small (3 to 4 in./7.6 to 10.2 cm.)
____ Medium (4 to 5 in./10.2 to 12.8 cm.)
____ Large (above 5 in./above 12.8 cm.)

3. Shelf life
___ 3 days
___ 7 days
___ 10 days
___ 2 weeks

4. Method of production
___ Suspended culture
___ Intertidal culture
___ On-bottom culture
___ Wild harvest

5. Product Form
___ In the shell (live)
___ Shucked, in jars or cans
___ Frozen
___ Smoked
___ Other

6. Species
___ Pacific *(C. gigas)*
___ Olympia *(O. lurida)*
___ Atlantic *(C. virginica)*
___ Kumamoto *(C. sikamea)*
___ European Flat *(O. edulis)*

7. Region of Origin
___ Northeast
___ Central Atlantic
___ Gulf Coast
___ Maritime Provinces
___ British Columbia
___ West Coast (not including Alaska)

8. Price, delivered to your business
___ less than $2.50/dozen
___ $2.50/dozen
___ $3.50/dozen
___ $4.50/dozen
___ $5.50/dozen
___ more than $5.50/dozen

___ Alaska

___ Australia/New Zealand

___ Europe

9) From which states and regions do you regularly source oysters?

a) Please circle each state/province from which you source oysters.

AND

10) b. As you did above, please rate the geographic regions *(Western, Southeastern, etc.)* that are most important for your business's oyster supply on a scale of 1 to 10, where 10 represents the most important or desirable attribute and 1 represents the least important or desirable. Again, equal ratings are fine.

The Western U.S. _____ Oregon Washington California Alaska	*The Northeastern U.S.*_____ Maine New Hampshire Massachusetts Rhode Island/ Connecticut	*Central Atlantic Coast* _____ New York New Jersey Delaware Maryland
The Gulf Coast States _____ Florida Alabama Mississippi Louisiana Texas	*Southeastern U.S.* _____ Virginia North Carolina South Carolina Georgia	*Western Canada* _____ British Columbia
*Maritime and Northeastern Canadian Provinces*_____ Price Edward Island New Brunswick Newfoundland Québec Nova Scotia	*Oceania* _____ Australia New Zealand Tasmania	*Europe* _____ France Spain U.K./Ireland Norway Portugal Other _____

11) How long have you been using your current oyster supplier(s)? Please use the first column for your primary supplier and the second and third columns for additional suppliers.

Primary	Secondary	Tertiary	
☐	☐	☐	Less than 6 months
☐	☐	☐	Six months to one year
☐	☐	☐	1 to 3 years
☐	☐	☐	More than 3 years

12) Are there months when any of the oysters you normally carry cannot be obtained? *(Or when you have to switch from your normal product.)* YES ☐ NO ☐

a) If YES, please **circle** each month in which it is difficult for you to procure oysters:

Jan Feb Mar April May June July Aug Sept Oct Nov Dec

b) If you circled any months above, are there any months in which your customer might be willing to bear a higher cost in order to obtain oysters?

_____

_____

13) Quality: Please indicate how important the following characteristics are in your determination of oyster quality, where 1= Not at all important and 10= Extremely important.

	Not at all important → Extremely Important
Shelf life	1 2 3 4 5 6 7 8 9 10
Water quality where oyster is grown	1 2 3 4 5 6 7 8 9 10
Uniformity of grading	1 2 3 4 5 6 7 8 9 10
Oyster size	1 2 3 4 5 6 7 8 9 10
Oyster shape	1 2 3 4 5 6 7 8 9 10
Fill (amount of meat in shell)	1 2 3 4 5 6 7 8 9 10
Geographic origin	1 2 3 4 5 6 7 8 9 10
Supply consistency	1 2 3 4 5 6 7 8 9 10
Government safety certification	1 2 3 4 5 6 7 8 9 10
Price	1 2 3 4 5 6 7 8 9 10
Lack of grit or sand in the product	1 2 3 4 5 6 7 8 9 10
Consistently low shrinkage/product loss	1 2 3 4 5 6 7 8 9 10
Depth of "cup" (part of shell that holds meat)	1 2 3 4 5 6 7 8 9 10

14) I prefer to purchase product by

☐ the dozen ☐ the 100 count ☐ other (please specify)

☐ weight ☐ the bushel _____

15) I prefer a product packaged in

☐ Styrofoam boxes ☐ Wet-lock boxes with insulated liners

☐ Wet-lock boxes with plastic liners ☐ Other _____

16) I prefer to receive product

☐ daily ☐ twice weekly ☐ weekly ☐ other (please specify) _____

17) Please note what percent of your oyster product moves into the following types of market. The sum of the percentages should be 100%.

a) Restaurants _____

b) Seafood markets _____

c) Supermarkets/grocery stores _____

d) Final consumers _____

e) Institutional Food _____

f) Special events (e.g. conventions, weddings, etc.) _____

g) Other _____ _____

= 100%

18) Please score the importance of the following items to your decision to purchase oysters: Use a scale from 1 to 10, where 1= Least preferred/Least Important and 10= Most Preferred/Most Important.

a) The importance of year-round availability to your decision

1 2 3 4 5 6 7 8 9 10

b) The importance of geographic origin of the oyster to your decision

1 2 3 4 5 6 7 8 9 10

c) The importance of oyster taste to your decision

1 2 3 4 5 6 7 8 9 10

d) The importance of product packaging and packaging flexibility to your decision

1 2 3 4 5 6 7 8 9 10

e) The importance of minimum order size requirements to your decision

1 2 3 4 5 6 7 8 9 10

f) The importance of oyster size to your decision

1 2 3 4 5 6 7 8 9 10

g) The importance of water quality to your decision

1 2 3 4 5 6 7 8 9 10

h) The importance of product price to your decision

1 2 3 4 5 6 7 8 9 10

i) The importance of your confidence in the vendor to your decision

1 2 3 4 5 6 7 8 9 10

j) The importance of product uniqueness or novelty to your decision

1 2 3 4 5 6 7 8 9 10

19) Please indicate whether the following statements are true or false.

	True	False
I carry oysters produced within 20 miles of my market		
I carry oysters produced within 50 miles of my market		
I carry oysters produced within 200 miles of my market		
I carry oysters produced in my state		
I carry oysters produced in a neighboring state		

20) The market for oysters in my area is growing. *(Please mark the appropriate category)*

____ Strongly Agree
____ Agree
____ Neutral
____ Disagree
____ Strongly Disagree

21) Please indicate how you feel about the following statements about your customers.

My customers prefer to purchase oysters produced locally.	Strongly disagree	Disagree	No Opinion	Agree	Strongly Agree	Don't Know
Knowing the geographic origin of oysters is important to my customers.	Strongly disagree	Disagree	No Opinion	Agree	Strongly Agree	Don't know
Product price is important to my customer when he/she chooses oysters.	Strongly disagree	Disagree	No Opinion	Agree	Strongly Agree	Don't know
My customers prefer live oysters (in the shell/on half shell).	Strongly disagree	Disagree	No Opinion	Agree	Strongly Agree	Don't know
Knowing the harvest date of product is important to my customers	Strongly disagree	Disagree	No Opinion	Agree	Strongly Agree	Don't know
My customers prefer prepared oysters (shucked; in jars, cans, or cooked).	Strongly disagree	Disagree	No Opinion	Agree	Strongly Agree	Don't know

22) Using your expertise, please score your customer's preference for the following product forms. Use a scale from 1 to 10, where 1= Least preferred/Least Important and 10= Most Preferred/Most Important.

a) Raw oysters, in the shell ____
b) Raw oysters, shucked ____
c) Frozen oysters ____
d) Smoked oysters ____
e) Canned/jarred oysters ____
f) Other (please specify) ____

Alaskan Product

23) I am familiar with Alaskan product. TRUE / FALSE

24) If you are familiar with Alaskan product, please indicate how you feel about the following statements:

Alaskan oysters are a high quality product	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Don't Know
Alaskan oysters offer a good value for the price	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Don't Know
Alaskan oysters are readily available to me	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Don't Know
Alaskan oysters have a good shelf life	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Don't Know
Alaskan oysters taste good	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Don't Know
My customers would be willing to pay a premium for Alaskan oysters	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Don't Know
I am willing to pay a premium for Alaskan oysters	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Don't Know
Alaskan oysters have consistent quality	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Don't Know
Alaskan waters are pristine	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Don't Know
Alaskan oysters are well-shaped	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Don't Know

25) Alaskan oysters are grown in the cool, clean waters of Coastal Alaska. Alaska has 34,000 miles of coast line and oyster growing sites are generally located five or more miles from human development. Alaskan oysters are currently selling for $4.50 to $6.00 per dozen, wholesale delivered to your business. Please indicate below what characteristics you would desire in order for you to purchase Alaskan oysters at this price.

a) I would purchase oysters at this price given the following characteristics:

Size	Shelf Life
____ Yearling (Up to 2 in./5 cm.)	____ 3 days
____ Extra Small (2 to 3 in./5 to 7.6 cm.)	____ 7 days
____ Small (3 to 4 in./7.6 to 10.2 cm.)	____ 10 days
____ Medium (4 to 5 in./10.2 to 12.8 cm.)	____ 2 weeks
____ Large (above 5 in./above 12.8 cm.)	

Grading	Other _____
____ <5% of oysters graded incorrectly*	_____
____ 5% to 14% of oysters graded incorrectly	_____
____ 15% to 25% of oysters graded incorrectly	_____
____ more than 25% graded incorrectly	_____
* i.e. grading is inconsistent with size and/or quality ordered	_____

OR

b) I would pay [10% ____] [20% ____] [30 %____] [other ____] above my current oyster cost for Alaskan oysters.

c) I would not purchase oysters at this price.

26) How much oyster product does your company handle weekly and/or annually? *(Please specify)* _____

27) Please note what percentage of the product you handle is:

____ Frozen ____ Raw

____ Canned/Jarred ____ Smoked

____ Other _____

Thank you for taking the time to complete this survey!

There's just one last step:
Please place this survey in the stamped envelope you received, and post it!
If you have misplaced your envelope, please mail your survey to:

Fishery Industrial Technology Center
University of Alaska Fairbanks
118 Trident Way
Kodiak, AK 99615